LETTER PERFECT
FRATERNITIES AND SORORITIES REINVENT GREEK LIFE AT RENSSELAER
We want to know what you think of Rensselaer magazine so we can serve you better. Log on to www.alumni.rpi.edu/survey to complete the questionnaire. The first 2,000 alumni to respond by July 15 will be entered in a drawing to win an Apple iPod 10 GB digital music player, a Sony CD/DVD player, or a SONY Cyber-shot digital camera. Winners will be announced in the September issue of Rensselaer.
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Over the past decade, Rensselaer students have been challenged to apply their academic experience and creativity to solve open-ended problems. The result: students prepared for the real world.

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Outstanding Service

Rensselaer students are committed to making the local community—and the world—a better place.

Rensselaer takes pride in its extraordinary students who bring distinction every day to the Institute through their hard work and commitment to academic excellence. Students maintain intense schedules of classes, labs, and study while also participating in myriad clubs, organizations, and athletic teams. What makes our students even more remarkable is their growing commitment to service, and their keen understanding that they have much to contribute to making the local community—and the world—a better place.

We hear too much these days about how young people are uninterested and uninvolved in bettering the world around them. I find the opposite to be true of Rensselaer students; in fact, our students have taken the idea of “communiversity” and made it uniquely their own. They are eager to work for positive change in the neighborhoods in which they live and study, and to put their education to use for others in need. Our students in Greek organizations exemplify this commitment (see story on page 20). However, dedication to leadership and service pervades the entire campus community, and this makes Rensselaer a place where the call to change the world has real meaning.

Rensselaer students are active in numerous community programs and fund-raisers throughout the year. Many younger alumni remember the annual Troy Record Clothe-A-Child campaign, a longtime student service initiative. Through a series of fund-raising events and opportunities, students raise enough money each year to provide warm winter clothing for youngsters whose families cannot afford to provide coats, hats, mittens, and boots—basic winter needs that no child should have to do without, especially during our sometimes bitterly cold winters. The most recent campaign provided about 800 children, ages 4 to 12, with winter clothes that they selected themselves at local stores.

In another service initiative, the Rensselaer chapter of Habitat for Humanity broke ground on the group’s first house in late April. The house at the intersection of 11th and Jacob streets, near the Troy campus, is being built for a Rensselaer staff member, the mother of three children who works in the mailroom. Now 300-members strong, the group has worked for almost three years to raise money for this project.

The campuswide celebration of the Rev. Dr. Martin Luther King Jr. holiday in January and the annual Rensselaer Community Service Day in April were other occasions for student service. During these daylong events, which were sponsored by Rensselaer’s Office of the First-Year Experience, students joined with faculty and staff to take part in service opportunities located throughout the city of Troy. Volunteers built an outdoor hockey rink in Prospect Park, helped children at the Junior Museum make musical instruments with recycled materials, conducted a spring clean-up in Frear and Prospect parks, and worked on the Arch II house, designed by architecture professor Walter Krone, to name a few of the many activities on these days.

Support for all these initiatives at Rensselaer is strong because we want to develop our students’ leadership skills and social awareness, as well as their intellects. Senior Jessica Constantine ’03 is a wonderful example of a student whose educational background and leadership skills are bettering the lives of women in the local community and half a world away. The first recipient of the Rensselaer Alumni Association Community Service Award, Constantine developed a self-help computer technology resource center for low-income women in Troy. Last summer, she traveled to Botswana to establish a similar center for women in the town of Gaborone. This is a classic example of a service project with true global reach and global impact.

Rensselaer is developing the next generation of leaders, creators, and problem-solvers who will face the dramatically changing challenges of the 21st century. Thus, we must give our students a world-class educational experience not only in our classrooms and labs, but also in the areas of their lives that impact the kind of human beings they will become. By supporting and nurturing the many dimensions of our students—especially their passion for service—we will enable them to be effective leaders and change agents as this young century unfolds. They will be exciting people to watch.
Terahertz Waves

The March issue of Rensselaer magazine had an interesting article on Rensselaer's Center for Terahertz Radiation. Unfortunately, the chart on page 23 shows visible light with a wavelength around 5 x 10 (-4) meters. When I went to RPI, even the chemists knew that visible light has a wavelength of around 5 x 10 (-7) meters. I initially thought this new research center was not living up to the excellence we all expect from RPI. Upon closer inspection, I was relieved to find that the chart was copyrighted by the Center for Science Education at UC Berkeley. It restored my faith in Rensselaer, but it does make me wonder about all those heavy radioactive elements.

TYLER HOUSEL '83
Lansdale, Pa.

I was really surprised to see what can, at best, be called an oversimplification in the article "The Next Wave." I wouldn't expect to see the statement, "Radio waves, the lowest frequencies, carry sound through space...." in an article aimed at lay persons, much less in an alumni magazine for a technological university.

I suppose that the statement is based on the fact that the kHz frequency range is used for the AM broadcast bands. I recognize that the article is about "T-rays," but I think that it might have been appropriate to mention applications such as induction heating and over-the-horizon radar (both of which work at frequencies lower than AM broadcasting).

I also think that suggesting that sound is carried by these waves creates confusion about the difference between sound waves and transverse electromagnetic (TEM) waves. In my opinion, it would have been helpful to the reader if it was made clear that "T-rays" are TEM waves, and if a distinction was made between "T-rays" and ionizing rays, such as X- and gamma rays.

MARTIN MARKSON '59
Great Neck, N.Y.

Engineers Underrecognized?

I was enthralled by President Jackson's talk to our alumni Class of '51 in Troy at our 50th anniversary, and again at her talk to Westchester alumni at the Rye Town Hilton, about the great plans for RPI in the new technologies and how those plans are being achieved. Having said that, I read her "President's View" in the latest RENSSLEAER magazine, which presented a realistic view of the risks it takes to make progress, highlighting NASA as an example. That's the good news.

The bad news: Having worked 50-plus years in industry and commerce with the first 26 years in a variety of aerospace high-tech research and development, I felt one thing was missing from her message identifying the aging of NASA personnel: the woeful lack of recognition in the form of salary levels accorded the senior practitioners with the necessary technical engineering skills working in government agencies and in their contractor's firms. Add to that the generally short duration of many of its contractor's contracts. Engineers do read the want ads and can figure the generally penurious retirement benefits offered by industry and the excessive longevity to reach an acceptable level. They are not about to jump into that mix without looking at other options first. Also, some American firms are doing their engineering and programming in Second and Third World nations.

With the title of "Engineer" still attached to train drivers and hoist operators among others (who incidentally are paid well above the average professional engineer), there is a large gap between NASAs need and people who will be available to fill that need.

There is no one solution; however, better PR is required. Perhaps as a first step, subsidizing engineering education as a way of attracting more students into our ranks, just as students are subsidized in education and medicine with their promising to work in certain fields and locations and even the military for a given number of years, some thought might be given to doing the same for engineers.

NORMAN ZELVIN '51
Eastchester, N.Y.

Table Talk

I was very interested in reading about and learning the fate of the Portsmouth table in the March 2003 issue of Rensselaer ("From the Archives"). During my time at RPI, the table was in the library, which then was housed in the basement of Amos Eaton Hall, and was located near the checkout desk—a fiendishly tightly controlled by Harriet (Hattie) Peck, chief librarian, and Jane Spoor, assistant librarian. Hattie ran a tight ship. She permitted no talking, shoe scuffling, and frowned on deep breathing if it generated more than one decibel of sound. Jane was more moderate.

I was pleased to learn of the table's proper location in the Mei-jii-mura Museum. It must be noted that was the only article in the magazine that I fully understood.

JOHN BYRON '36
Delmar, N.Y.

We'd love to hear from you! To provide space for as many letters as possible, we often must edit them for length. Please address correspondence to: Rensselaer Magazine, Office of Communications, Rensselaer Polytechnic Institute, Troy, NY 12180, e-mail to alum.mag @rpi.edu, or call (518) 276-6531.
For nearly 50 years, research professor of music Pauline Oliveros has been meshing technology with the acoustics of instruments and space to connect her music to the meditative rhythms of her surroundings.

Inspired by the sounds of nature, 70-year-old Oliveros is considered by many to be the godmother of ambient, or meditative, music. Her world-renowned music is based on improvisation and layers of overlapping sounds that can take on the imitation of cataclysmic earth tremors or gentle rain falling on leaves.

Oliveros premiered her latest piece, “Sound Geometries,” this spring. The piece was written for a 13-member orchestra, the Musiques Nouvelles, which performed in the Ars Musica Festival, one of the best-known contemporary music festivals in Europe.

The performance combined the sounds of the ensemble with Oliveros’ Expanded Instrument System. As the musicians performed, microphones delivered the music to a computer, which modified and distributed the notes in auditory geometric patterns through an eight-channel sound system.

Oliveros conceived the EIS in the 1960s to help her control sound transformations using foot pedals when she played her accordion. The EIS evolved from simple tape delays to an elaborate digital signal processing system that can, for instance, alter acoustical sounds’ apparent distance from the audience. For example, the system can make the sounds appear to be in an echo-filled space, and the notes can be sped up or delayed.

Oliveros, whose music philosophy is based on the principles of improvisation, electronic music, ritual, teaching, and meditation, founded the Deep Listening band in the 1970s. She established the Pauline Oliveros Foundation in 1985 to support the creation of new works in the arts.
ANTHROPOLOGY

Motherhood Lost

AFTER SUFFERING THE FIRST OF SEVEN heart-breaking miscarriages in 1986, anthropology professor Linda Layne vowed to bring the subject of pregnancy loss to light. Now, nearly two decades later, Layne presents her findings in a new book titled *Motherhood Lost: A Feminist Account of Pregnancy Loss in America* (Routledge, 2003). In it, she challenges society, and women’s movements in particular, to publicly discuss the topic and offer more helpful support to “would-be” parents.

About 15 to 20 percent of pregnancies in the United States end in miscarriage or stillbirth each year, according to the comprehensive research guide *Williams Obstetrics*. In *Motherhood Lost*, Layne explains that the losses are seldom acknowledged or rarely discussed.

“Grief for a dead loved one may be both inevitable and necessary, but the additional hurt that bereaved parents feel when their losses are dismissed and diminished by others is needless and cruel,” she says. “It is high time we recognize pregnancy loss and offer our support.”

The reasons for society’s silence are complex. Layne says she found that middle-class American women who suffered pregnancy losses in the late 20th century dealt with two contradicting forces. Factors like new reproductive technologies, smaller family sizes, and abortion politics, for example, changed the experience of pregnancy, and led many to think of their fetuses as “babies” much earlier than previously had been the case. But, at the same time, she says, parents who lost babies found themselves without adequate social support since deep-seated cultural taboos prevented friends and family from talking about the loss.

Layne recommends that feminists promote open discussion of pregnancy loss and that doctors educate patients better about possible pregnancy difficulties. She also urges science reporters to offer more measured perspectives about the state of reproductive medicine.

“Over the years I have analyzed the cultural resources that women and their networks draw upon to make sense of their losses,” Layne says. “I have written this book in the hope of adding some lesser-known resources to the available repertoire.”

CHEMICAL ENGINEERING

Making Plastic Smarter With Protein

HOW DO YOU IMPROVE ON PLASTIC, A MODERN material that has already changed the way we do everything from designing medical devices to building cars? Embed it with specialized proteins called enzymes, says Shekhar Garde, assistant professor of chemical engineering.

“Such protein-enhanced plastics might someday be able to act as ultra-hygienic surfaces or sensors to detect the presence of various chemicals,” says Garde. These types of materials could have a wide range of applications, for example, in the security or medical industries.

Garde and his graduate student Lu Yang presented their research at the 225th national meeting of the American Chemical Society, held in New Orleans this spring.

Proteins require water to function. Non-water environments do not provide the driving force necessary to keep proteins in their normally intricately folded state; unfolded, the molecules cease to function. To learn what it takes to successfully integrate proteins into a dry substance such as plastic, Garde and Yang use molecular dynamics simulations to create a computer model of the proteins and study the molecules in both watery and non-watery environments such as organic solvents. They are working in collaboration with Jonathan Dordick, the Howard P. Isermann ’42 Professor of Chemical Engineering, who conducted the initial protein research.

Proteins are “molecular machines,” according to Garde, uniquely able to efficiently and reliably conduct chemical processes. Their powerful activity, however, is limited to relatively low temperatures and pressures. Helping proteins adapt to a non-water-based environment may actually increase the resiliency of the molecules and make them useful in situations they otherwise would not survive in, such as exposure to high temperatures or other extreme conditions. In addition to preserving protein’s known actions, the researchers speculate that they may also “discover that proteins could perform some new functions [in dry environments], something that they could not do in water,” according to Yang.
Taking the plunge: MBA students Cecilia Domingos, Michael Lobsinger, and Jeffrey Betz.

**Team Floats to the Top in Business Plan Competition**

Boats and lifejackets go hand and hand. Yet, often such “floatation gear,” required on most boats, gathers dust under the seat instead of being worn as intended because it is bulky and less than appealing.

Recently, four Rensselaer MBA students developed a new type of lifejacket that you may even forget you’re wearing—until you are tossed out of the boat and into the water.

The Float-Tech Personal Flotation Device (Float-Tech PFD) is a lightweight liner that can be zipped into a light, medium, or heavy jacket. The liner inflates automatically when it is immersed in water or when a rip cord is pulled.

The device was developed by Orca Gear, a company formed by Jeffrey Betz ’03, Cecilia Domingos ’03, Michael Farmer ’03, and Michael Lobsinger ’03. The students, who invented and wrote the business plan for the Float-Tech PFD, won the Tech Valley Collegiate Business Plan Competition in April. The contest, which was open to all area college students, was sponsored by the Severino Center in Rensselaer’s Lally School.

Orca Gear, a company that integrates technology into recreational apparel, was awarded $5,000 in cash. It now has the opportunity to receive an additional $20,000 in seed funding and $8,500 in legal counsel as well as patent application services. Additionally, the Severino Center will sponsor the group at FORTUNE magazine’s small business plan competition later this year.

Float-Tech PFD originated in Rensselaer’s Design, Manufacturing, and Marketing course, a class for Lally School MBA students. (See, also, page 14.) A patent for the device and certification from the U.S. Coast Guard are both pending.
Industry Partnerships Support Research

"WE ARE WITNESSING THE DAWN OF A NEW ERA in science, industry, and quality of life. More quickly than anyone could have imagined even just a few years ago when the National Nanotechnology Initiative was announced, nanotechnology is entering the marketplace and indeed changing our lives," said Alan Marty, executive-in-residence, JP Morgan Partners, in testimony to the House Science Committee on March 19. "As production of nanoproducts becomes easier, faster, and cheaper, every market sector will begin to feel their impact. The National Science Foundation (NSF) conservatively predicts a $1 trillion global market for nanotechnology in little over a decade."

Nanotechnology uses clusters of molecules and atoms to make nanometer-size (billionth of a meter) building blocks for new materials. These blocks have different properties than larger sizes of the same materials, and can therefore be used for many new applications. Already, the ability to control the pattern of the building blocks of materials has resulted in advances such as mirrors that do not fog, more effective sunscreens, and many other applications.

The Rensselaer Nanotechnology Center focuses Rensselaer's broad faculty expertise in this critical area of emerging technology. It integrates research, education, and technology commercialization through partnerships with government and industry. Rensselaer also operates an NSF Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures—located within the Rensselaer Nanotechnology Center.

The RPI-Industry Partnership in Nanotechnology, which supports Rensselaer's research and educational efforts in nanotechnology, is integral to the success of the university's work in this critical research area. The partnerships include ABB, Albany International, Eastman Kodak, Philip Morris USA, and IBM.

Examples of recent work sponsored by these corporations include research to create thin films with multifunctional properties—such as scratch-resistant, transparent coatings made from nanofilled alumina/gelatin composites—and studies that focus on learning to control the behavior and properties of nanoparticle-filled polymer composites. Potential commercial applications include coatings to protect X-ray film from scratches that can lead to misdiagnosis and eyeglasses that are more scratch-resistant.

"The industrial partnership with Rensselaer in nanotechnology provides a focused, collaborative intimacy with a progressive research center," says William McKenna, director of external technology for Eastman Kodak, a major partner in the center. "We have been able to develop a strategic relationship that allows us to import fundamental scientific expertise and broaden our internal knowledge base. It also allows us to identify promising talent for Kodak as we move forward our nanotechnology initiatives."

Entrepreneurial Prowess

ENTREPRENEUR MAGAZINE HAS NAMED THE technological entrepreneurship program at Rensselaer's Lally School of Management and Technology as one of the 25 best entrepreneurial programs in the nation.

More than 700 entrepreneurship programs were researched for the magazine's "Top 100 Entrepreneurial Colleges and Universities" feature, which appeared in the April edition. Final listings were based on more than 30 criteria, including curriculum, teaching and research faculty, degrees and certificates offered, research centers and institutes, advisory boards, and business-community outreach.

Rensselaer was lauded for fostering entrepreneurship through its faculty research and publications, the Severino Center for Technological Entrepreneurship, the Office of Technology Commercialization, and Rensselaer's business incubator, the nation's first on-campus business incubator. The Lally School's MBA program also provides students with significant opportunities to interact with an extensive network of successful entrepreneurs and to participate in venture capital presentations.

"Rensselaer has a long track record of success in providing its students the skills they need to take their ideas and technologies to market," said Denis Simon, dean of Rensselaer's Lally School. "Our 'techno-MBA program' channels the passion and energy of our students, and helps them develop new ideas and concepts into commercially relevant products and services. What differentiates Lally is our first-year MBA course, Design, Manufacturing, and Marketing, which allows students the opportunity to develop, market, and create their own products and services." (See, also, page 14.)
Making Dreams Come True

As family and friends cheered the graduates of the Class of 2003 at Rensselaer’s 197th Commencement in May, preparations were under way to welcome the newest members of the Rensselaer community. The incoming Class of 2007 is shaping up once again to be the “cream of the crop”—with the majority in the top 10 percent of their high school class, with SAT scores on the rise, and increasing numbers of Rensselaer Medalists.

These outstanding young people will arrive at Rensselaer from all around the country and, indeed, from around the world, eager to begin their college careers on a campus transforming itself into one of the nation’s leading research universities. They look forward to the many opportunities that await them, but many would not have chosen Rensselaer without the financial support that will make it possible to achieve their educational goals.

One of the goals of The Rensselaer Plan is to drive new financial resources to areas of the highest priority. As Rensselaer moves forward to develop research facilities, and to hire and support top researchers and teachers, new funds are needed for direct student support. Sufficient financial support will allow Rensselaer to achieve a university community with true intellectual, geographic, gender, and ethnic diversity—educated to work and lead in a global economy.

The Rensselaer Board of Trustees fully supports the priorities of The Rensselaer Plan and especially its emphasis on student support. “Dr. Jackson is leading Rensselaer in the right direction, with new facilities under construction, and a gifted and growing faculty. Its students deserve the financial support that makes it possible to access these tremendous resources,” says trustee Nicholas Donofrio ’67.

Members of the Board of Trustees are leading this effort. New endowed scholarships will be available to students thanks to new commitments from Donofrio and several trustees including John Carr ’77; Frank McKone ’63; Paula Lor­ring Simon ’68 and her husband, Frank; and Robert Swanson ’58 and his wife, Cynthia Shevlin.

They join trustee colleagues with established endowed funds in support of students, including Carolyn and Neal Barton ’58, Irene and Robert Bozzone ’55, Hope and David Hirsch ’65, Nancy Mueller, James Mullen ’80, and Linda Sanford ’75.

On her way to her “dream job” at Ernst & Young, scholarship recipient and new graduate Amy Gennarini ’03 says it best: “It was the financial support of the Alumni Scholarship and my innovative education that helped my dreams come true.”
“Grounded” in the Arts

IGOR VAMOS, INTERNATIONALLY KNOWN multimedia artist and assistant professor of integrated electronic arts, has been awarded a Guggenheim Fellowship from the John Simon Guggenheim Memorial Foundation. Vamos will use the award’s $35,000 grant to complete a project that uses Global Positioning System (GPS) and other wireless technology to provide a new medium on which to view his new documentary, Grounded.

Grounded is about Wendover, a remote Utah desert town and the home of the Wendover Air Field. The military base was the secret training site for the B-29 crews that dropped the first atomic bomb on Hiroshima on Aug. 6, 1945. The now-defunct base—the largest in the world at the time—has used more than three million acres in the surrounding area for bombing and training activities.

“The documentary will focus on the historical land uses and the contemporary adaptive re-use of the military landscape, ranging from the use of former base buildings for local homes to the use of bomb craters for landfill sites,” Vamos says.

To “view” the documentary, those driving through Wendover will pick up a handheld computer with a GPS receiver and a set of headphones at one of several artist residency locations in town. The device, which can be latched to a vehicle’s dashboard, will have wireless access to the Web to deliver the audio narration in real time. Viewers can also pull over their vehicles to watch any of the embedded Web-based, real-time videos and slideshows. What the device generates depends on where the viewer decides to go.

The Guggenheim, a highly competitive and prestigious fellowship, is awarded for outstanding achievement and exceptional promise in a discipline. Vamos was chosen from more than 3,000 applicants. The award is another indication that Rensselaer’s arts program is gaining recognition in the country.

Software Advances Tissue Engineering

RENSSELAER RESEARCHERS HAVE DEVELOPED adaptive computer simulation software that promises to advance tissue engineering. This paves the way for new implants and safer transplants engineered from human tissue. Better products mean less risk of patient rejection and infection.

The software is currently being used to design a bioartificial artery formed from a combination of Teflon, collagen, and muscle cells. It was developed by Dean of Science Joseph Flaherty, graduate student Toshiro Ohsymi, and other colleagues at Rensselaer’s Scientific Computation Research Center.

Flaherty’s team expanded a mathematical model that is widely used to solve scientific and engineering problems, such as bridge or aircraft design. The expanded method adapts to the complex phases and different parts of a biological simulation.

For instance, all parts of an artery are not created equal. To withstand the stress at the point of suture, the ends of the blood vessel must be thicker than its middle. Before fabricating a bioartificial artery, the simulation takes into account how the materials and biological elements change as the artery is formed. This allows researchers to determine how well the final product will withstand the constant pulsating flow of blood.

Research that results in such sophisticated software and other information technology highlights the growing trend toward computer simulation in concert with experimentation, Flaherty says.

“As we realize the enormous potential of tissue engineering, there is an increasing need for computer-aided design to optimize the fabrication of bioartificial tissues,” Flaherty says. “Simulation systems, such as ours, provide researchers with an optimal starting point, thereby limiting the number of costly trials and increasing the accuracy of experimentation.”

The software can be applied to numerous chemical and biological processes to better understand wound-healing, for instance. Project collaborators also include researchers at the University of Minnesota.
Television Pioneer Allen Du Mont

INVENTION AND ENTREPRENEURSHIP permeate Rensselaer’s history in many fields, from agriculture to the Internet. No less holds true in entertainment, notably television.

Regarded as the founder of the American television industry, Allen B. Du Mont ’24 developed the first commercially viable cathode ray tube (CRT), the picture tube that allowed him to take TV out of the laboratory and into the marketplace.

The Brooklyn native earned an electrical engineering degree at Rensselaer in 1924, though his interests in electronics materialized years earlier. Born in 1901, Du Mont was stricken by polio when he was 11. While he spent a year in bed recuperating, his father bought him a radio. Soon after, he built his own out of an oatmeal box.

Du Mont began his career as an engineer working on radio tubes at the Westinghouse Lamp Company in New Jersey. To devote his interests to the early developments of an experimental system, called the “television,” Du Mont left the radio industry to start his own business in the garage of his New Jersey home. A year later, he developed the CRT into an inexpensive product that lasted for thousands of hours. Until then, earlier versions of the CRT were expensive and burned out after 25 or 30 hours.

With virtually no market at the time for his new CRT, Du Mont only made $70 from his product the first year. Over the next 25 years, however, Allen B. Du Mont Laboratories’ annual sales grew to more than $75 million. The company sold CRTs, television transmitters and receivers, radios and hi-fi sets, mobile communications equipment, and a wide variety of electronic instruments for commercial, hospital, and government use.

Du Mont, who held more than 30 patents, built and sold the first home television receivers just before WWII, and invented the first electronic viewfinder. He also was the first to synchronize audio and video broadcasting in 1930.

By 1947, Du Mont had established Du Mont Television Network, which included WABD, the station that launched comedian Jackie Gleason into television stardom. WABD is now WNYW, the New York City station operated by Fox News.

In 1948, Du Mont established the first regular daytime programming. He also helped formulate broadcast standards for black-and-white—and later color—television.

Du Mont, who continued to cultivate the TV industry until his death in 1965, served as vice president of the Rensselaer Board of Trustees and was a lifetime member of the board. To add to the list of his “firsts,” he was one of the initial inductees into the Rensselaer Alumni Hall of Fame when it was established in 1998.
Chemical Engineering

Stopping Artery Blockages Before They Begin

Lakshmi Santhanam is searching for molecules with properties that may someday be used as medicines able to pre-empt the damaging inflammatory response involved in atherosclerosis. Santhanam, a chemical engineering student working with professor Jonathan Dordick, is helping to develop a novel technique that cuts costs and could aid in the speedy discovery of additional drugs to address other chronic diseases, such as rheumatoid arthritis and asthma.

Santhanam and Dordick, the Howard P. Iserman '42 Professor of Chemical Engineering, presented their research at the 225th national meeting of the American Chemical Society.

An enzyme called NADPH oxidase has been implicated in causing heart disease by generating free radicals that cause arteries to thicken, eventually leading to blockage. The known heart-healthy benefits of certain phytochemicals (such as those found in red wine and green tea) are thought to stem from their natural ability to scavenge free radicals.

Recent work by the Rensselaer team and other researchers, however, indicates that these chemicals may possess an even more important activity, which involves inhibiting the assembly of the active enzyme. This research aims to discover new drugs that may selectively block the action of NADPH oxidase and lead to effective therapies to prevent cardiovascular disease.

They select potentially effective molecules and use a modern microarray technique to attach minute amounts of precursors of potential NADPH oxidase inhibitors to glass slides. Molecules chosen for further screening are examined for biological activity against the damaging enzyme.

The "biocatalysis lab-on-a-slide" technique was originally developed by Dordick, Santhanam, and Michael Hogg, a biologist at the Veterans Administration in Albany, N.Y. The tiny samples allow the researchers to look at hundreds of different molecules at once, speeding research and conserving costly lab resources.

Architecture

Lending a Hand in Preserving Local History

Thanks largely to the efforts of a School of Architecture graduate program, the memorable "signal building" in downtown Troy recently was placed in the National Register of Historic Places.

The 1920 structure on State Street, officially known as the Fire Alarm Telegraph and Police Signaling Building, was used by dispatchers to monitor city and emergency calls. The building, now owned by Rensselaer County, has been vacant since the 1960s.

The effort to include the building on the federal list began two years ago when the county legislature contacted Fred Cawley, director of Rensselaer's Master of Science in Building Conservation Program. Cawley launched an initiative to study ways in which the building might be preserved and provide useful space. Graduate students in the RECORDING HISTORIC STRUCTURES class began by recording the dimensions and other details of the historical building.

In fall 2001, Rensselaer instructor Peter Shaver offered the building as a research project for the same class. Architecture graduate student Karen Roth's final paper provided the documentation for the federal register application process that Shaver completed. Shaver is program analyst for the state Historic Preservation Office that nominates properties to the state and national registers of historic places.

The historic listing makes the county eligible for federal funding. The goal is to eventually use the building as office and storage space.

As a result of the Building Conservation Program that Cawley launched in 1998, several other structures have been added to the federal list. Among them is the Osgood Steamer Company, listed in the register in 2000. The building in South Troy is still used today as a firehouse.

Through the program, graduate student Elisabeth Bakker-Johnson is working on two more projects in hopes they will be added to the register.
FOCUS ON... CLAUDE ROUNDS

AS A KID GROWING UP IN TROY, Claude Rounds played baseball on Rensselaer’s Anderson Field (behind the North Lot). Little did he know that on the other side of campus, at the height of his career, he would be heading up one of the Capital Region’s most ambitious construction projects in recent memory.

As vice president of the Division of Administration, Rounds is executing Rensselaer’s comprehensive $255 million South Campus Development Project. So far, work continues apace on the 218,000-square-foot biotechnology center, the experimental media and performing arts center (EMPAC), and a 500-car parking garage. The biotechnology center’s foundation is complete, structural steel has been erected, and the steel supporting the glass atrium is in progress. The center is expected to open in fall 2004. The parking garage, with the foundation already in place, is expected to be complete by spring 2004. The design of EMPAC is in progress with early site work scheduled to begin this winter.

Implementing this enormous effort requires not only coordination with designers, builders, and other contractors, but also a large dose of public-relations skills, and the ability to listen and be proactive.

“This is a major undertaking for any university in any community, and we must do everything we can to make sure that our campus community and surrounding neighbors fully understand what is being done,” Rounds says.

Since last year, Rounds has headed monthly public meetings at the Heffner Alumni House to provide the opportunity to update the campus community and local residents on the project’s activities and schedules, as well as to solicit comments and questions about the overall project.

“The public information meetings have been very successful,” he says. “We have received positive feedback and demonstrated Rensselaer’s commitment to the community.”

The South Campus Development Project is only part of how Rounds’ division is implementing The Rensselaer Plan. Seventy-five other new construction projects, facilities improvements, and other renovations also are earmarked, representing an additional $66 million in capital investments to enhance the physical and information technology infrastructure, and to improve safety and the quality of campus life.

In addition to the campus planning, design, and construction activities, Rounds’ division also oversees a host of other services, which include public safety, environmental and site services, and physical plant services—to name just a few.

“In a nutshell, the administration division provides essential services that support the living, learning, and working experiences for the Rensselaer community,” Rounds says.

It’s a tall order, but Rounds’ professional background as a skilled engineer, administrator, strategic planner, and communicator allows him to get the job done. Before joining Rensselaer in 2001, Rounds had a 22-year career at Albany Medical Center. He served 15 of those years as vice president for plant management.

Rounds’ experience also comes from his years of public service and his ability to connect to his own community. The East Greenbush resident has served as president of the board of directors of Rouse RPC, a nonprofit agency that builds, operates, and manages affordable housing for seniors in Rensselaer County. A former chair of the East Greenbush Planning Board, Rounds also served as project planning consultant for the town.

ROBERT LINHARDT, a world-leading carbohydrate chemist, has been appointed a senior constellation chair in biocatalysis and metabolic engineering at Rensselaer. Linhardt is internationally known for his research on the study of bioactive carbohydrates, particularly the complex polysaccharide heparin. Heparin is a major clinical anticoagulant with more than 500 million doses used worldwide each year. Heparin and related molecules exhibit a large number of newly discovered biological activities and have great therapeutic potential.

OMKARAM “OM” NALAMASU, director of Rensselaer’s Center for Integrated Electronics (CIE), received a $1 million grant from the New York State Office of Science, Technology and Academic Research (NYSTAR) Faculty Development Program. The funding will be used to help institutions of higher education in New York state recruit and retain leading entrepreneurial research faculty in science and technological fields that have strong commercial potential. Nalamasu, an international expert in micro- and nanoelectronics, has made seminal technical contributions to nanofabrication technology.

MURAT ARCAK, assistant professor of electrical, computer, and systems engineering, was awarded a Faculty Early Career Development (CAREER) Award from the National Science Foundation. The CAREER Award is the most prestigious award given to junior faculty members. Aracak will use the award’s $400,000 grant to advance his study of nonlinear control systems, and to apply them to fuel cells. His
research could lead to affordable fuel cell technologies for a range of applications.

**Richard Radke**, assistant professor of electrical, computer, and systems engineering, has been awarded a Faculty Early Career Development Award (CAREER) from the National Science Foundation. The CAREER Award provides a grant of $400,000 and is the most prestigious honor presented to junior faculty. Radke will use the award to develop a new framework for “distributed computer vision.”

This mathematical system, he says, will someday allow thousands of video cameras to automatically work together to map distant or inhospitable areas, or track potential enemies or criminals.

**Audrey Bennett**, assistant professor of language, literature, and communication, was elected to the board of directors of the American Institute of Graphic Arts, Upstate New York Chapter, for a two-year term from 2002 to 2004.

**William Luddy Jr. ’74 and Peter Schroth ’88**, professors in the Lally School of Management and Technology at Rensselaer at Hartford, were named co-editors-in-chief of the *Journal of Legal Studies in Business*, a blind-peer-reviewed journal with national circulation and over 700 subscribing libraries.

**James Tiem ’66**, the Yamada Corporation Professor in the Department of Decision Sciences and Engineering Systems and professor in the Department of Electrical, Computer, and Systems Engineering, has been elected vice president of the IEEE (Institute of Electrical and Electronics Engineers) Educational Activities Board. The IEEE is the world’s largest technical professional society, with more than 380,000 members in more than 150 countries.

**Suhranu De**, assistant professor of mechanical, aerospace, and nuclear engineering, has been appointed to the editorial board of *Computers & Structures*, an international journal, published by Elsevier, for researchers and practitioners in academic, governmental and industrial communities.


**Arthur Bergles**, the Clark and Crossan Professor of Engineering, Emeritus, was recently elected a foreign member of the Italian National Academy of Sciences. With 58 regular members and 21 foreign members, the Italian National Academy of Sciences is one of the most exclusive academies in the world.

**John Harrington**, dean of humanities and social sciences, was named to the Executive International Committee of Irish Theatrical Diaspora, an ongoing scholarly organization that is planning the centenary of the Abbey Theatre in Dublin, Ireland, in 2004.

**Sidney Fleisher**, School of Architecture woodshop manager and adjunct faculty member, was honored at the annual Association of Collegiate Schools of Architecture conference with the 2003 ACSA Honorary Award for his outstanding contributions to architectural education through teaching and design. For the past 22 years, Fleisher has directed the school’s woodshop, teaching courses in *Material Explorations and Fabrication and Furniture and Design Making*, as well as providing instruction for the safe use of woodworking hand tools and machinery. “His subtle guidance has been the common thread to students’ explorations and appreciation of craft and has had an immeasurable influence over a generation of students,” said Alan Balfour, dean of architecture.

**William W. Shuster**, who earned bachelor’s, master’s, and doctoral degrees from Rensselaer, died March 20. He served Rensselaer for more than 40 years as associate professor, professor, chairman of bio-environmental engineering, and director of the Environmental Engineering Program, which he helped to establish. Shuster was named emeritus professor of chemical and environmental engineering in 1983. He received numerous professional honors during his career, including being named a fellow of the American Institute of Chemical Engineering, a diplomat of the American Academy of Environmental Engineering, and membership in Sigma Xi honorary research society and Phi Lambda Epsilon. At Rensselaer, he was a recipient of the Distinguished Faculty Award, Demers Medal, and the RPI Silver Bowl Award. He served as class correspondent and executive secretary for the 50 Year Club. Shuster was a member of many societies and was involved in numerous civic organizations.
The art of INVENTION

BY KAREN KELLY

The device to help people with tremor disorders was just one of the many off-the-wall ideas MBA student Tauseef Ansari and his colleagues first devised during their late-night brainstorming sessions. The interdisciplinary team, cobbled together as part of the Design, Manufacturing, and Marketing class at the Lally School of Management and Technology, had decided to search for a market niche in the health-care industry.

They scoured the news, scanned research articles, and volunteered at nursing homes with the goal of sparking a groundbreaking and, they hoped, lucrative invention.

“We boiled it down to 10 ideas,” recalls Ansari, who has a degree in electrical engineering. “We had the ‘superglasses,’ eyeglasses that would magnify an object when you flip them forward, as well as the ‘fall down air bag,’ an air bag you could attach to a belt to protect your hip in a fall.”

But as they debated their options, the group kept returning to the concept of a device that would enable people with tremor disorders to feed themselves.

“My father has Parkinson’s, so I’ve seen the need for this device firsthand,” says MBA student and computer scientist Max Morton. “The problem was we had no idea how to do it. But our professors said, ‘Don’t let that discourage you—a solution will evolve with time.’”

Eight months later, the team, now called 7-Solutions, has an invention, a business plan, and an application filed for a provisional patent.

That process of invention—the development of a unique idea from its conception to a working reality—has become an integral part of the Rensselaer education experience.

Over the past decade, classes such as the Multidisciplinary Design Laboratory Experience, Introduction to Engineering Design, Inventor’s Studio, and the introduction of an academic major in Product Design and Innovation have challenged students to apply their academic experience and creativity to real-world problems.

“In these courses, students are faced with open-ended problems that can lead to any number of solutions,” says Gary Gabriele, Rensselaer’s vice provost and dean of undergraduate education. “You don’t come in and pick up your textbook or computer and start grinding out stuff. It’s really an opportunity for

TEAM 7-SOLUTIONS: As part of the Design, Manufacturing, and Marketing course, the four-person team came up with the concept for a device that would enable people with tremor disorders to feed themselves. They developed a cuff that will apply pressure and electric impulses to the affected muscles. Eight months later, the team has an invention, a business plan, and an application filed for a provisional patent.
students to express their creativity and develop some of the problem-solving skills that lead to more creative solutions. It's more like real life.”

In the year-long Design, Manufacturing, and Marketing (DMM) class, “real life” arrives in the form of market testing—taking an idea into the marketplace again and again. Morton and Ansari admit the results of those visits surprised them.

“When we first talked to my dad and other people with this illness, they said they didn’t care what the device looked like,” says Morton.

“So we came up with the ugliest thing,” says Ansari, “It was a utensil attached to an arm that could clamp to the back of your chair. The users said it looked like a torture device.”

“We found out they really wanted something that would be virtually invisible,” adds Morton. “That’s when we started developing a cuff that would apply pressure and electric impulses to the affected muscles.”

Morton says their project benefited from the team’s diversity: his experience as a computer scientist, Ansari’s degree in electrical engineering, Robert Vero’s work in physics, and Andrew Mansson’s experience in the material sciences.

Management professor Chris McDermott says most MBA students in the DMM class come from technical backgrounds, although the projects vary in their levels of complexity. He says the primary mission of the course is to finish with a viable prototype and a fully developed business plan.

“We try to take them beyond just thinking about technical solutions to the actual creation of a successful business,” says McDermott, one of four professors who team teach the course. “They need to consider customer needs and wants, as opposed to just solving a problem without a link to the real marketplace.”

CREATIVE SOLUTIONS

Engineering students in the Inventor’s Studio course found that link to the marketplace in their desire to communicate electronically with their grandparents.

“I find I talk to people all the time on Instant Messaging, but I don’t often talk to my relatives because they’re not on e-mail,” explains senior Tim Ryan. “We wanted to create a device that would allow people who aren’t computer literate to send and receive e-mail.”

Ryan and his classmates Neil Grabowsky, Jay Foster, and Adam Wishnusky developed “T-Mail,” a technologically “smart” device that looks like an attractive wooden box. The user simply writes a letter with the recipient’s name at the top and slides it into the envelope-shaped slot at the top of the box. The machine scans the letter, identifies the recipient’s e-mail address in its program, and sends the note to the recipient as an e-mail attachment. The device also will receive and print out return e-mails.

Why is such a device needed when people could just call or write a letter? Instructor Burt Swersey says he pushes his students to ask these questions and identify problems that others haven’t recognized.

“The best inventors look at the things we all take for granted and say, this could be better,” says Swersey, who was granted 12 patents during his 25 years in the medical equipment industry. “We have to convince students to strive for the ideal solution, [which is] not the safe solution, but the one they may not know how to do.”

For seniors Jerusha Chacko and Bill Thornewell, the challenge was to find a device that would entertain pets that spend hours at home alone. After conducting research in the field of animal behavior and reviewing existing patents, one group identified a market for an automated pet sitter that would entertain pets that spend hours at home alone. They designed their prototype to look like a chewable dog bone that can sense a pet approaching and quickly move away, catching the animal’s interest. The device also will dispense treats and train dogs to stop barking.
relished the opportunity to build an idea from the ground up.

"After four years in engineering, I was tired of just crunching numbers and pushing out formulas. I wanted to see what else goes into creating a product," says Thornwell. "The hardest part was selling the idea—we still have to convince Burt that it's technically feasible, that it's marketable, and that it's patentable."

While Swersey places a strong emphasis on "thinking big" and striving for the ideal solution, he says a great idea, even an impressive prototype, is not enough; they must work out the details. Students are required to adhere to a design process, beginning with the identification of an unrecognized need and the creation and analysis of multiple solutions, then moving to a detailed design mock-up, calculations and testing and, finally, taking steps to protect and potentially patent the design.

"When they say, 'I have something that will work,' I say, 'OK, show me the calculations,'" says Swersey, who requires students to keep a design notebook complete with sketches, calculations, and formal drawings. "It's their responsibility as engineers to completely document their work, so someone else could replicate it and to protect the intellectual property they're working on."

Understanding the patent process is an integral part of Inventor's Studio. To qualify, designs must be "new, useful, and not obvious to someone skilled in the field." Thus far, three patents have been granted to student projects, one is pending, and several other applications have been filed.

Since its creation in 1990, Rensselaer's Office of Technology Commercialization has helped students and faculty obtain about 100 patents, with another 200 inventions currently being evaluated. Chuck Rancourt '70, the office's director, says the majority of patents are granted to graduate students and faculty, but the numbers at all academic levels have been increasing steadily.

"We've seen the disclosure flow [from faculty and students] triple since we first began," says Rancourt. "And this process is a tremendous learning experience. They develop an appreciation for what this is all about, and it will definitely help them in their careers later on."

INTRO TO IDEAS
For most engineering students, the art of invention begins in the sophomore year in Introduction to Engineering Design, a class held in the O.T. Swanson Multidisciplinary Design Laboratory, Rensselaer's state-of-the-art center for design, prototyping, and manufacture.

Four days a week, the laboratory is overrun with sophomore teams that have one semester to design and create a device to solve a specific problem. This year, 20 student teams are attempting to create ping pong-playing robots that can respond to opponents at many different levels.

Amid a flurry of flying ping pong balls, sophomore James Antalek eagerly describes the components of his team's robot, which features two long barrels that move along a table-length pneumatic slide. The slide represents the robot's legs, controlling its movement by applying air pressure to push it from one side of the table to the other. The white plastic barrels, meanwhile, represent its arms—spitting out balls at different speeds and in different directions, all controlled by a computer program. But the robot's game is not random. The team also has devised a laser screen made up of pocket lasers that can record and predict the trajectory of the player's ball. Antalek says the computer then will direct the robot to respond appropriately.

"That screen represents the robot's eyes, so it can know where the ball is going and the quality of the return. The robot will be able to respond properly with a slow or fast return depending on where you're hitting it to," explains Antalek. "Players can set the computer to emulate real game play or to challenge themselves... and there are always the Easter eggs you can put in there to surprise people."

Team member Damien Pinto-Martin admits they were so eager to build their prototype, they fell behind in the documentation of their work. He says Swersey, their instructor, forced them to slow down and demonstrate on paper the progression of their design and the evidence that it would work.

"He accuses people of arm-waving, saying their design is fantastic, but we have to show proof," says Pinto-Martin, who's working on a team of 11 students. "We have to show the calculations so that other people can see exactly what we did...and so our teammates, who all work different roles, can see what we're doing, too."

REAL REAL-WORLD PROBLEMS
Two years later, many of these students return to the Multidisciplinary Design Laboratory to tackle even more challenging projects. The seniors in the MDL Experience are still looking for solutions to real-world

Games People Play
The process of invention seems to transcend disciplinary boundaries, encompassing everything from industrial air filters to interactive pet toys...and even video games. In Kathleen Ruiz's studio arts course, Experimental Game Design, diverse teams of students work together to create working video games. The course begins with extensive research into gaming history and the students' personal preferences. Ruiz's guiding principle: "If it's been done before, don't do it."

The result are games that envision a world without gravity, or that require physical interaction with the computer. (For once, you can throw something at the screen and it will respond.) Ruiz says the teams bring together visual and sound artists, computer scientists, and engineers to create video games layered with talents from each discipline.

"I love the mixture. There's such a collaborative, studio atmosphere," says Ruiz, an assistant professor of multidisciplinary electronic art. "I feel it's important the arts have a dialogue with the other disciplines. We'll need that as we face the complex problems of the future."

The teams first create a storyboard of their game, describing the story, the characters, the game "world," and the rules. After incorporating the feedback of their classmates, the team creates the game on computer, along with a detailed design document, a description of the target audience, and the impact it may have on our culture.

"It's a fun title, but they work very hard," says Ruiz. Many of them also succeed in the business. Several graduates are now "innovators" in the field of game design, bringing the creative process they learned at Rensselaer to an emerging industry.
problems—but with a twist. In their case, they collaborate with an actual corporation, foundation, or entrepreneur who’s provided financial and technical support in return for a team of fresh, creative minds.

“This is really an opportunity for the students to integrate a lot of the information they’ve had in their previous coursework,” says Gary Gabriele, who designed both the MDL and the major in Product Design and Innovation (PDI). “They have to go back to that knowledge they’ve learned in a different course or even build upon it to educate themselves about something they never knew before.”

In fact, the nature of the MDL projects favors a team with a solid foundation not just in one engineering discipline, but in many. This quickly becomes evident at a meeting of the EZ Cork team, as the six members sit around a large table, trading ideas for a “strippable” synthetic wine cork.

“We all work off each other, that’s what makes this great. One person comes up with something and then someone else suggests a variation on that idea,” says Philippe Montillier. “It’s actually like a real-life experience.” Montillier begins the meeting by offering an overview of the team’s work so far. As industrial engineering students, he and Sarah Jurta manage the logistics of the project and confirm the team’s data. PDI major Andy Chang describes the research he’s conduct-
ed on the preferences of wine drinkers and the implications that has for the cork's design. Chang also joined mechanical engineering students Aaron O'Connor and Nat Fake to create the cork production machine's design on a CAD program and then build a prototype that etches spiral cuts into the cork. Meanwhile, materials engineer Mike Thompson is ensuring the adhesives will seal the cork properly.

The idea for a "strippable" cork was invented by entrepreneur and airline pilot Mark Boudreau, who approached the MDL to help him make it. A wine connoisseur, Boudreau wanted to develop a traditional-looking cork that can be opened without a corkscrew.

"The tradition would still be there. The maitre d' can display the cork, you still could open it with a corkscrew. But if you're out in the field or on a plane and you don't have one, you can just grab this tab—," says Boudreau, pulling on a tiny invisible handle at the top of a cork, "and it just comes out like a spring."

The EZ Cork team shares the lab with 11 other sponsored projects. There are four from the National Science Foundation, including a lightweight power-assisted wheelchair and an improved hand-cycle for physically disabled cyclists. Seniors also can devote much of their final year to industry-sponsored projects, including the search for a more efficient steam turbine for GE Power Generation, an advanced air filtration system for UTC Carrier Division, and a new elevator design for UTC Otis Elevator.

"We work closely with potential sponsors to identify challenging, open-ended, real-world problems. They give us projects they haven't had time to pursue themselves, as well as funding and professional support," says Mark Steiner '78, the director of the O.T. Swanson Multidisciplinary Design Laboratory. "These are truly substantive projects that provide a natural motivation for the students."

The EZ Cork team is already moving on to its second prototype—an automated machine that guides the cork through a set of blades, creating a spiral cut that will allow the wine drinker to easily remove the cork. Entrepreneur Mark Boudreau shakes his head in wonder as he ponders the team's aluminum and rubber machine.

"That right there would have made my life so much easier. It's unbelievable—I hand cut 500 corks and then they put that together," says Boudreau. "Everything it took me three years to think about and research, it took these guys a week or two to come up with. It was amazing to see."

But there are limitations to these projects. Mike Gradziel, a mechanical engineering student working on the Otis Elevator project, says a team may come up with off-the-wall ideas, but they can't always pursue them when there's a company expecting results.

"I'm sure we could have built a complex solution that met all the objectives, but it wouldn't have been a lot of use if Otis couldn't mass-produce it," says Gradziel, who's developing an elevator design that would save space and reduce costs. "Cost constraints are a serious issue, and we felt it's part of our job to take that into consideration."

**TAKING IT TO THE STREETS**

While financial and time constraints are common factors in any engineering plan, students in Rensselaer's Product Design and Innovation program take a much broader view at the start of a new project—they study the effects the proposed design will have on the outside world.

"We see things in a social and environmental context, outside the paradigm of market demand," explains Jeffrey Hannigan, associate professor of science and technology studies and the director of the PDI program. "That's led to the identification of real opportunities for innovation within those concerns, which aren't addressed by the dominant culture."

The Product Design and Innovation major was created in 1998 as a dual major in Science, Technology and Society and engineering or architecture. While the majority of students choose the mechanical engineering path, Gabriele says they're often the type who would be restless in a traditional engineering program.

"PDI attracts very creative students who have lots of ideas and really want an opportunity to explore them," says Gabriele, one of the program's founders. "They're interested in the technical stuff but they don't necessarily want to create technology. They want to create designs."

In other words, these are students who love to invent stuff. Neil Grabowsky, one of the creators of T-Mail, the e-mail machine for technophobes, says he noticed a difference as soon as he began working with other engineers in IED and Inventor's Studio. While many students became frustrated when the professor repeatedly challenged their ideas, Grabowsky relished the opportunity to scrap everything and start again.

"In PDI, we're really pushed to come up with an idea and drop it, [then] come up with another and drop that, as opposed to starting with one plan at the beginning of the semester and staying with it," says Grabowsky, who's taken eight design courses as part of the PDI curriculum. "So it's almost nice when someone says, 'You can do more with this.' It gives you the drive to find that better idea."

PDI students also bring a social science perspective to an engineering team, conducting research to discover the effect a product will have on the consumer. For instance, PDI major Andy Chang led an ethnographic study for the EZ Cork team, investigating the cultural preferences of wine connoisseurs.

"I studied their traditions and what they desire in a cork and discovered connoisseurs don't want a weird gadget where the cork should be," says Chang. "The team realized that this placed limitations on our design."

Perhaps the most valuable role a PDI team member can play is as a bridge between colleagues in different disciplines.

"They can work with the very creative people at the front end of the process, people who develop just a few quick sketches, and then translate those ideas and communicate them to engineers in a way not many other disciplines can," explains Gabriele.

Student inventor Neil Grabowsky puts it another way: "It's like they're putting both brains, the designer and the engineer, into one head. That makes it work better because we can come up with the design and, at the same time, know what factors go into the engineering."

But not everyone feels comfortable with courses that favor ill-defined, open-ended problems as opposed to the exercises in a textbook. Gabriele says some faculty, and even students, fear these courses may lack the rigor of a traditional engineering class. He assures them that's not the case.

"These courses are much more rigorous in terms of the demands on students," says Gabriele. "The important message here is that we're still a good engineering school. But we're challenging students on these other axes as well now... and these are the axes that will teach them how to think and work."

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Go Greek!

Rensselaer's Greeks redefine fraternity and sorority life as leadership and service take center stage.

BY RAY LUTZKY '02

Before Drew Thompson '06 began his freshman year at Rensselaer, he was certain that he did not want to join a fraternity.

"I had already convinced myself that fraternities were bad, and not worth my time, before I even gave them a shot," he says. "I bought into the stereotypes."

But then Thompson attended the annual "Meet the Greeks" event held after Freshman Convocation, during which he became interested in joining Pi Kappa Alpha, the largest fraternity on campus. Thompson enjoyed the chapter's rush events, which included volleyball and movies at the house, and adventure experiences such as white-water rafting and cliff jumping. Thompson says that after experiencing Rensselaer's Greek community firsthand, his opinion of fraternities and sororities changed.

"I think the Greek community is a great idea," he says. "There are definitely fraternities at Rensselaer that have it right, and I wish people at other colleges could have that experience." Thompson believes "a fraternity is a wonderful place to grow," and that his future brothers helped him adapt during his first semester at Rensselaer.

Thompson's change of heart is indicative of the way fraternities and sororities at Rensselaer are attracting students who thought Greek life wasn't for them. Greek chapters at Rensselaer are drawing new members by redefining the meaning and purpose of membership in these sometimes centuries-old organizations.

With the growing diversity of college students and an abundance of campus organizations to join, fraternity life especially has proved less popular over the last decade. Fraternity membership declined as much as 30 percent in the 1990s, forcing many chapters across the country to close down. Further crippling the tradition, some major colleges and universities questioned the viability of their Greek systems, with some, including Williams College and Union College, even going so far as banning fraternities and sororities from their campuses. Meanwhile, Rensselaer's Greek community is going strong—reinventing itself to meet the challenges of the system's third century of existence at the Institute.
Go Greek!

The 34 fraternities and sororities of Rensselaer in 2003 bear little resemblance to those portrayed in National Lampoon's Animal House or in the media. Today's Greeks run chapters like businesses, assessing risk management, dealing with budgets amounting to tens of thousands of dollars, and providing academic assistance programs, leadership development programs, and community service opportunities. With so many campus organizations at Rensselaer these days, fraternities and sororities must prove to students that they will enhance the university experience. The more than 1,300 undergraduates at Rensselaer who belong to fraternities and sororities agree it's a dynamic way of college life that creates leaders who care.

LEADERSHIP AND SERVICE

Like Drew Thompson, Pashmina Lalchandani '03 also didn't expect to join a sorority when she arrived in the United States to attend Rensselaer. But she discovered after joining Sigma Delta that being a sorority member made her an effective leader and focused her energies on service to the campus community and beyond.

"Sororities can help you see yourself and help you grow inwards, while at the same time growing outwards by helping those in need," she says. Today, Lalchandani, who has lived in Taiwan and London, is the president of Sigma Delta, a local sorority for Latin-American women founded at Rensselaer in 1996.

Lalchandani is involved in a number of leadership and service roles, including undergraduate class council president and the founder of the first 'V-Day' celebration at Rensselaer, an event, co-sponsored by many Greek organizations, that raises awareness of women's issues.

"Fraternity and sorority members are the most active students in the community," says Lalchandani. "We comprise a majority of the leadership, are heavily involved in community service, and serve as a role model for civic excellence." In one example, fraternity members served as role models to the other young men on campus when they supported V-Day in February by handing out white ribbons in the Union to those who agreed to help stop violence against women.

Community service and philanthropy are central to the mission of Rensselaer's Greek chapters today. "Greeks are one of the greatest contributors to local charities," says Travis Apgar, associate dean of students. "They contribute to organizations such as Joseph's House (a Troy homeless shelter), as well as local churches and community organizations." Rensselaer's Greeks were well represented at a variety of service activities on Martin Luther King Jr. holiday and during the Institute's fifth annual community service day in April.

Fund-raising for charity ranges from fun activities such as the annual 24-hour Teeter-Totter event during Grand Marshal Week, co-sponsored by the sisters of Alpha Phi and the brothers of RSE, to Lambda Chi Alpha's food drive that raised more than 22,000 pounds of food for Unity House in Troy. Greeks also raise money for a wide variety of causes, from research on diseases to helping children in local schools and recreational groups.

Rensselaer's four sororities have been deeply involved in community service initiatives in Troy and beyond since they first became part of Greek life at the Institute in 1977. "Sororities have weekly tutoring sessions with the children at the Troy Boys and Girls Club," says Jennifer Spear '03, president of the Panhellenic Association. "We held our annual Greek God and Goddess Contest during Greek Week to benefit a local boy, who is attempting to raise funds to attend school.

Sororities have raised money for the annual Clothe-A-Child campaign during the holiday season, and worked with fraternities on campus to improve fund-raising capabilities. "We've raised money for women's cardiac care and research, held numerous cultural awareness activities, and served as Big Sisters to children in the Troy area," she says. "As individuals, sorority women have a large impact on campus, being involved in athletics, community service organizations, student government, and other clubs and organizations."

GOOD NEIGHBORS

Apgar gives Rensselaer Greeks high marks for community relations—always a challenge when Greek chapters maintain houses in residential neighborhoods. "Most chapters have developed very good relations with their neighbors over the years," he says. "When misunderstandings arise, it's usually very few of the chapters that are involved...some have yearly meetings with their neighbors so that they know who the new officers are." Fraternities have raked lawns, helped manage property, cleaned out basements, assisted with spring cleaning and, especially this past winter, shoveled snow. "Those are the underlying things that they rarely get attention for," says Apgar.

Rensselaer's Interfraternity Council took neighborhood involvement a step further in February when its members unanimously approved a resolution to improve the relationship of Rensselaer's fraternities with the neighborhoods surrounding campus. The Resolution on Community Relations calls for better interaction and communication with neighbors and reaffirms the Greeks' dedication to community service and philanthropy in the City of Troy. "We want more of a proactive approach on our part," IFC President Jeff Andritz told the Polytechnic after the vote.

Dean of Students Mark Smith praises the action. "Passing this resolution is definitely a positive move for Rensselaer's fraternities and for the community as well. "It just reinforces the wish of both groups to peacefully co-exist and make living in Troy a pleasant experience."

The resolution had a more controversial beginning. A City of Troy noise ordinance passed last August created a buzz among Greek students who were wor-
Go Greek!

established that they would be targeted by police. When two fraternity chapter presidents were cited by Troy police in the fall for violations of the ordinance, student unhappiness over the city's actions led to an unprecedented open dialogue among all the parties involved—local neighborhood associations, Troy City Council, the mayor's office, the Troy Police, Rensselaer Cabinet, Office of Student Life, student government, the Interfraternity Council, and the Panhellenic Association, among others.

"This open channel of communication did more for community than anything I've seen in a while; it extended an olive branch to the neighbors," says John Muller '03, who was IFC president at the time. "It said 'We understand your point of view, and we're going to change our ways.'" Rensselaer's Greeks emerged from this process resolved to take responsibility for their actions and create better relations with neighbors and the city.

"I am very proud of the direction that our fraternities and sororities are going," Muller says. "We have been faced with a challenge, and we have risen to meet it."

Now that the resolution is on the books, Greeks are taking action to put it into practice. In late April, the Interfraternity Council launched the first Greek Community Cleanup Day in neighborhoods surrounding the campus. About 120 Greek students spent a Sunday cleaning up the 12th Street approach to make the stairs more usable and clearing brush and trash from Prospect Park. The council partnered with Rensselaer Public Safety, the Troy Community Police Department, the mayor of Troy, and Sodexo food service to organize what the council hopes to be an annual event.

While Greeks are taking the initiative to spearhead such projects, thinking of themselves as members of the greater community can be a change, says Roger Grice, Ph.D. '87, clinical associate professor of technical communication and adviser to Lambda Chi Alpha. "If you compare what happened back when I was an undergraduate in the '60s, Greeks didn't really care about the neighbors," says Grice. "But that's not the way it is today; we need to give back to where we live."

Grice encourages Greeks to get involved in "community" events, as well as their own philanthropy initiatives. "Greeks have also worked with members of the community to clean up the local parks, build houses, and work at soup kitchens," says Grice. "It's important that [Greeks] know they are part of the neighborhood, too."

Grice says this strong commitment to community service keeps him involved with the chapter. "I'm always impressed by the level of maturity in the Greek community now," he says. "We're not just here to have fun, but we're here to do good things and have fun. Rensselaer students tend to be very responsible, and that's apparent in our Greek life."

Although Rensselaer's Greek community is working toward the goal of being a "national model of excellence," challenges remain. Spear believes that while Greeks have worked hard to be better neighbors, they still need to make a significant contribution to their local community.

"In order to thrive in the future, the Greeks at Rensselaer must work with their neighbors to establish a comfortable living

Community service and philanthropy are central to the mission of Rensselaer's Greek chapters today. Greeks are some of the largest contributors to local charities.

Rensselaer Greeks Take Part in Alcohol Awareness Programs

Greeks—And College Life in General—is often equated with high-risk behavior, including alcohol and drug abuse. Rensselaer is helping students turn the tide by providing them with educational programs that address the dangers of underage and high-risk drinking. Awareness education begins during First-Year Experience Orientation, when students are engaged in a frank discussion about the risk of alcohol-related death among freshmen.

Alcohol comes up again in every context—from weight issues to relationships—during the many health programs delivered by Theresa Kersch, certified health education specialist at Rensselaer's Gallagher Student Health Center. "I do programs on every aspect of health," says Kersch, "but I always bring it back to alcohol. It's calories when we talk about nutrition, and a potential cause of violence in relationships."

Programs specifically dealing with alcohol and sexual abuse are popular with fraternity and sorority groups. Kersch often goes "on the road" to bring her in-demand courses to the fraternity houses, hitting her Greek audiences right where they live. Defying the usual stereotypes, fraternities actually seek out this preventive education, she says.

Greek members' participation in these programs is in keeping with their high rate of involvement in campus organizations. "By and large, our frats take part in more community service and education programs than other groups that may have service as their focus," says Travis Apgar, associate dean of students and former director of Greek life.

Despite their enthusiasm for educational programs, Rensselaer Greeks have not been immune to the consequences of alcohol abuse. Tau Kappa Epsilon (TKE) fraternity was suspended recently for two years following an incident of underage drinking by a campus visitor in October 2002. The suspension bans the fraternity from participating in any campus activities or recruiting new members. A two-year probationary period will follow; at that time, TKE brothers will be required to attend alcohol-abuse educational programs. A violation of the alcohol policy this spring also resulted in a six-month suspension for Alpha Phi Alpha fraternity.

"We hope that this fraternity will come back to Rensselaer as a success story," says Apgar. "Our other Greek groups continue to live up to our expectations as well as the high standards of their fraternities and sororities."—Joely Johnson
situation for both interested parties,” says Spear. “If the neighbors see that Greeks are making an effort to work with them and are actually interested in their concerns, we can actually be one community.”

LIFETIME LEGACY

Greek membership lasts a lifetime. That’s why the involvement of Greek alumni in chapters plays a key role in the continued existence of fraternities and sororities. Chapter houses, for example, often are maintained by a group of volunteer alumni, while other alumni serve as advisers.

Grice says he was nervous about how the Rensselaer chapter of Lambda Chi Alpha would receive him when he began serving as an academic adviser in the mid-1990s. “One brother, Jamie Burts ’96, literally dragged me to the chapter house and said ‘Here they are, say hello!’ … and I did,” he says. Grice hopes more alumni who are interested in getting involved with a chapter will connect with a member in order to decide how they can best contribute.

The Alumni Inter-Greek Council (AIGC), a subcommittee of the Rensselaer Alumni Association, is another vehicle for alumni involvement. AIGC is charged with assisting the mutual welfare of all of the Greek organizations on campus. Mark Anderson ’79, a brother of the Rensselaer Society of Engineers, serves as president of the AIGC.

“Here at RPI, we’re looking to ensure that success is our path,” Anderson says. “Greek alumni are developing a positive relationship with the university, and are always looking for ways to work together to further the Greek community cooperatively.”

AIGC hopes to build a dynamic relationship with the university. Anderson envisions a “vertically integrated” Greek community, where the AIGC communicates with undergraduate Greek councils and can produce a consistent message.

“We know that the Greek connection is very strong; for example, the majority of the Rensselaer Alumni Association board is made up of Greek alumni,” he says.

Apgar encourages alumni who are interested in becoming involved with their chapters to contact the Dean of Students Office. “We’ll help you get in touch with the chapter and the national organization, because we want alumni to be involved,” he says. Even an alumnus or alumna who has no formal fraternity or sorority advising experience can be a benefit to a chapter.

“A new person, even with no advisory background, can be very positive,” says Apgar. “They may be more open to new ideas and trends, and that can be uplifting for the chapter.”

Dean Smith says alumni play an important role in developing chapter leadership. “They can help create better transitions from one year to another, from one president to the next,” says Smith. “They can also provide moral and physical support to the chapter leadership, so that if there are problems, the alumni can be proactive.” Strong chapter advisers are those who have become involved and have sustained positive working relationships with undergraduate officers and are able to help them to meet future challenges, Smith says.

Grice agrees. Over the years, he has helped the brothers of Lambda Chi Alpha deal with life crises, career planning, and academics, in addition to the day-to-day challenges of living in a fraternity. It’s a key way, he says, of continuing and strengthening the legacy of Greek life at Rensselaer. “I wanted to help out and pay back for all the things that I’ve gotten from my fraternity over the years.”

RSE Resurgent

The alumni of one of Rensselaer’s oldest fraternities resurrected their organization after violations of Institute student life policy put the chapter out of business for three years.

In the late 1990s, Rensselaer was forced to suspend the Rensselaer Society of Engineers (RSE) and revoke its ability to recruit new members after a series of judicial violations. The punishment was appealed until it ended in 2000 at the New York State Supreme Court, which elected not to make any ruling on the interactions of a private institute and its students.

Alumni members of RSE rallied to help the fraternity survive and correct past mistakes.

RSE was founded in 1866 as the Pi Eta Scientific Society. Arriving on campus at about the same time as some of the first fraternities, it has remained one of the oldest “local” organizations in the U.S. Since it has had no other chapters at other colleges, a national organization, a strong base of alumni have served to guide the chapter through its long history.

“What do we need to do to protect our history?” asked Mark Anderson ’79, a member of the RSE board of trustees. “We didn’t have the luxury of a national organization, which could colonize on some other campus if we went away.”

“We energized our alumni to turn the situation around,” says Anderson. “We adopted and constructed policies with elements drawn from national organizations, even though RSE is older than almost all national fraternities.”

Relations with the Institute were a focus of their attention. “We found ourselves in a situation where we had a diminished relationship with the school and that just fell apart,” says Anderson. “In our charter, we state our position is to support RPI, so we needed to make sure that our behavior was in support of that.”

By working with national organizations such as the Association of Fraternity Advisors, RSE was able to get back on track and meet the expectations that would take them off suspension, which was lifted in 2000.

Since then, RSE members have gained respect and leadership roles in the Greek community. RSE member John Muller ’03 just finished a term as president of the Interfraternity Council, and was also selected as Greek Man of the Year in 2002, while Mark Anderson ’79 is currently president of the Alumni Inter-Greek Council.
The Rensselaer Alumni Association created the Alumni Hall of Fame in 1995 to preserve and celebrate the exceptional heritage of alumni accomplishments throughout the years. Since Rensselaer's founding in 1824, distinguished alumni and leaders of the Institute have forged frontiers in industry, science, education, and technology. The newest class of inductees, announced at Reunion 2003 and on these pages, brings to 49 the number of members of the Hall of Fame. They include a university president, famed physics educator, steel entrepreneur, pioneering woman Ph.D., sunscreen developer, geologist, acoustician, and astronaut. They will be formally inducted into the Hall of Fame at a ceremony on campus Sept. 19. Etched windows commemorating their accomplishments will be added to those lining Thomsen Hall in the Darrin Communications Center.

Howard P. Isermann
Sunscreen Developer, Trustee
Class of 1942 (1921-)

After earning his degree in chemical engineering, Howard Isermann joined Van Dyk & Co. It was there that he developed the ultraviolet absorber that became the most effective and leading sunscreen in the world. This development, in addition to preventing sunburn, has contributed to significant progress in skin cancer prevention. Active in fragrance research organizations, he founded Novarome Inc. in 1980, manufacturer of fragrance compounds used in a wide variety of consumer products, from soaps to perfumes. He joined Rensselaer’s board of trustees in 1986 and was named an honorary trustee in 1998. His commitment to chemical engineering at Rensselaer has been exceptional, as chairman of the Chemical Engineering Advisory Council and generous benefactor of fellowships and professorships. In 1989 the Institute renamed the department the Howard P. Isermann Department of Chemical Engineering. He has been active on the School of Engineering Advisory Board, a leader in alumni and fund-raising activities, and received the RAA’s Distinguished Service Award in 1994.

Douglass Houghton
Geologist
Class of 1829 (1809-1845)

Douglass Houghton, who was named assistant professor of chemistry and natural history at Rensselaer following his graduation,
THEODORE JUDAH and EDWIN CROCKER made significant contributions to the successful completion of the transcontinental railroad.

EMILY & WASHINGTON ROEBLING oversaw construction of the Brooklyn Bridge in New York City.

GEORGE FERRIS designed the original Ferris wheel.

PALMER RICKETTS, Remsenber's ninth president, led a major transformation of the Institute.
was destined to become one of the great pioneers of geological and mining sciences in the country. He served in numerous scientific capacities during his brief lifetime, including medical doctor. At Amos Eaton’s recommendation, he was invited by the Michigan legislature to lecture on chemistry, botany, and geology. His success was immediate and he was appointed Michigan’s first state geologist at age 28. Houghton’s efforts led to the discovery of deposits of salt, copper, and iron in the state, with enormous impact on the state’s young economy. His work on a thorough survey of the wild lands of the U.S., approved by Congress, was cut short when he drowned in a storm on Lake Superior. A city, a county, and a lake honor his name in Michigan.

WALTER E. IRVING
ENGINEER, INVENTOR, MANAGER
CLASS OF 1896 (1874-1958)

Showing the ingenuity that would propel his career, Walter Irving creatively mortgaged his horse to raise tuition money to attend Rensselaer. He founded in 1902 what was to become the Irving Subway Grating Co., which perfected open steel grating, first used for subway ventilating chambers. Since then his open steel flooring has been used on bridge decks, catwalks, loading platforms, railroad cars, and in thousands of other industrial applications. Each has dramatically improved safety. He was honored by the armed forces during World War II for his creation of airfield mats, known as “magic carpets,” which provided emergency landing fields quickly and could be easily camouflaged. He introduced the “Streamline Splice,” which enabled open steel flooring to be laid in one piece no matter how large the area. Irving actively promoted alumni activities, served as chair of the first Rensselaer Fund, and established the Irving Subway Grating Scholarships at Rensselaer, which continue today.

ROBERT RESNICK
PHYSICS EDUCATOR
(1923–)

Robert Resnick is professor emeritus at Rensselaer and the former Edward P. Hamilton Distinguished Professor of Science Education, 1974-93. Together with his co-author David Halliday, he revolutionized physics education with their now famous textbook on general physics, still one of the most highly regarded texts in the field today. He is author or co-author of seven physics textbooks, which appear in 15 editions and more than 47 languages. Resnick introduced Rensselaer’s interdisciplinary science curriculum in 1973 and was its chair for 15 years. He was awarded the American Association of Physics Teachers’ highest honor, the Oersted Medal, in 1975, and served as its president, 1986-90. A Distinguished Service Citation issued in 1967 by the association said, “Few physicists have had greater or more direct influence on undergraduate physics students than has Robert Resnick.” Rensselaer named its Robert Resnick Center for Physics Education in his honor.

LOIS GRAHAM
LEADER IN ENGINEERING EDUCATION
CLASS OF 1946 (1925–)

Lois Graham was one of the first two women to earn a degree at Rensselaer and did so in an accelerated schedule brought on by World War II. She continued her studies at the Illinois Institute of Technology (IIT), where she embarked on a lifetime of contributions to engineering education. Her career at IIT was one of establishing “firsts” for women and breaking down barriers for women in the engineering profession. She was the first woman at IIT to earn advanced degrees in mechanical engineering, the first woman in the U.S. to earn a Ph.D. in mechanical engineering, and the first woman to receive a fellow award from the American Society of Heating, Refrigerating and Air-Conditioning Engineers, honoring her for contributions as an educator in thermodynamics and cryogenics. A lifelong mentor and role model, she established IIT’s model program for Women in Science and Engineering, and its Minorities in Engineering Program.

J. CHRISTOPHER JAFFE
INTERNATIONAL ACOUSTICIAN
CLASS OF 1949 (1927–

Christopher Jaffe is recognized internationally for his innovation and leadership in architectural acoustic design. He has worked directly with many prestigious symphony orchestras and opera, dance, and theater companies. Over the last four decades he has consulted on more than 250 performance halls, including Severance Hall in Cleveland, Ohio; Bass Performance Hall in Fort Worth, Texas;
and the Concert Hall at the Kennedy Center in Washington, D.C. Inventor of the Electronic Reflected Energy System, he maintains his position as principal and chairman of JH Acoustics Inc., which he founded in 1958. Jaffe has taught acoustics at the Juilliard School and City University of New York, as well as at Rensselaer, where he is founder of the master’s program in architectural acoustics. He is the recipient of the Year 2000 Honor for Collaborative Achievement Award from the American Institute of Architects and the Ellis Island Medal of Honor.

MYLES N. BRAND
LEADER IN HIGHER EDUCATION
CLASS OF 1964 (1942–)

With degrees in philosophy, Myles Brand entered academia as a professor, gradually moving his role to administrator. Yet even as president of one of America’s prestigious universities, he continued to teach. He served as chair of philosophy at the University of Illinois-Chicago, elevating the department’s rank to among the top 10 in the nation. He then served as dean of arts and sciences at the University of Arizona, provost and vice president for academic affairs at Ohio State University, and president of the University of Oregon before gaining national recognition as president of Indiana University, 1994 to 2002. He is credited with guiding Indiana toward a balance between teaching and research that stood out among its peer schools. A former chair of the American Association of Universities, he sparked media attention and healthy national debate about the role of athletics in higher education during his presidency at Indiana. In 2003, Brand was named president of the National Collegiate Athletic Association.

JOHN L. SWIGERT JR.
ASTRONAUT
CLASS OF 1965 (1931-1982)

An Air Force fighter pilot and engineering test pilot, John “Jack” Swigert earned a master’s degree in aerospace science from Rensselaer’s Hartford campus in 1965 and in 1966 was selected by NASA in its fifth astronaut class. Assigned to the backup crew of the Apollo 13 mission to the moon, he replaced the prime command pilot just days before take-off. Swigert, Jim Lovell, and Fred Haise were forced to abort the mission when an oxygen tank exploded; they converted their lunar module into a lifeboat, conserving enough power to assure their survival in the harrowing journey back to Earth. Swigert was presented the Presidential Medal of Freedom in 1970. He was elected to the U.S. House of Representatives from Colorado in November 1982, but died of bone cancer one month later before he could be sworn in. The state of Colorado placed a statue of Swigert in the Rotunda of the U.S. Capitol in 1997.

Research by Carl Westerdahl
Photo of Douglas Houghton courtesy of Bentley Historical Collections, University of Michigan

THE RENSSELAER ALUMNI HALL OF FAME

INDUCTED SEPTEMBER 1998
Stephen Van Rensselaer
Amos Eaton
Benjamin F. Greene, Class of 1842
Emily Warren Roebling
Washington A. Roebling, Class of 1857
Palmer C. Ricketts, Class of 1875
George W.G. Ferris, Class of 1881
John M. Lockhart, Class of 1887
Margaret O.S. Sage
Sanford L. Cluett, Class of 1898
Emil H. Praeger ’15
J. Erik Jonsson ’22
Clay Patrick Bedford ’24
Allen B. Du Mont ’24
H. Joseph Gerber ’47
George M. Low ’48
Ivar Giaever ’64

INDUCTED OCTOBER 1999
Asa Fitch, Class of 1827
James Hall, Class of 1832
William B. Cogswell, Class of 1852
Alexander J. Cassatt, Class of 1859
Leffert L. Buck, Class of 1868
Mordecai T. Endicott, Class of 1868
Henry A. Rowland, Class of 1870
George T. Horton, Class of 1893
Milton Brumer ’23
W. Lincoln Hawkins ’32
Ralph B. Peck ’34
Keith D. Mills ’38
C. Sheldon Roberts ’48
Nancy DeLoye Fitzroy ’49
Marcian E. Hoff ’58
Roland W. Schmitt

INDUCTED SEPTEMBER 2001
Theodore Dehorne Judah, student in 1837
Edwin Bryant Crocker, Class of 1833
Eben N. Horsford, Class of 1866
Frederick Grinnell, Class of 1855
John Flack Winslow
William H. Wiley, Class of 1866
Alan M. Voorhees ’47
Raymond S. Tomlinson ’63
Class Notes Deleted for Privacy Concerns
THE NETWORK WORKS
Entrepreneur Group Facilitates Alumni Success

Stu Benton '62, entrepreneur and venture capital investor, volunteers his time to run a campus workshop for Lally School students.

ONE OF THE FASTEST GROWING AREAS FOR alumni involvement is affinity groups. These organizations, based on similar professional affiliations, give alumni the chance to network, share knowledge and ideas, and make useful personal and professional connections with alumni in their areas. One very successful group has been the Rensselaer Entrepreneur Network (REN), for alumni involved in or interested in new business ventures.

Many of those involved with REN have benefited from the expertise, intellect, and volunteerism of Stu Benton '62, a successful entrepreneur and venture capital investor. Benton's involvement began about two years ago, when he attended a New York City entrepreneur affinity group event.

Benton was so impressed by what he saw that it was not long before he was part of REN's leadership team, and began helping the group develop and grow. He also became involved in the information technology group, acting as a panelist at a job forum on campus for IT students, and helping develop a new group in Boston.

Working with the Lally School, Benton taught a class on entrepreneurship last year. He also mentors many young companies from the Incubator Center. He has run several workshops on campus for these companies, as well as sessions for Lally School students, on developing business plans and a venture pitch to present to venture capitalists. "Involvement in the entrepreneur affinity group has been very satisfying for me," says Benton. "I enjoy interacting with current students. I'm glad to share my knowledge and experience with them, and in return, they always energize and challenge me." In addition to his involvement with the REN group, Benton is a member of the Annual Fund's Leadership Gift Committee and the RAA board.

Would you benefit from networking with alumni experienced in entrepreneurial startups and venture capital? Do you have knowledge and experience to share with alumni who are also starting up a business? Affinity groups also exist for biotechnology, information technology, building trades, and patent law. Put your Rensselaer connection to work for you, and get involved today. To learn more, go to www.alumni.rpi.edu/si/affinity.html or contact Kathy Kinsey at kinsek@rpi.edu or (518) 276-2832.

RENSESSELAER LOSES DEDICATED VOLUNTEER JOHN BUCKLEY '49

Rensselaer lost one of its most dedicated volunteers when John P. Buckley '49 passed away this April. Buckley was well-known to alumni who participated in the RAA's travel program as the program's manager and a frequent guest on trips. He was a familiar figure to residents of the Troy community as well, having been city manager for more than a decade. Buckley spent more than 30 years in public service in the city, acting as commissioner of the Department of Public Utilities, overseeing the building of Troy's new water filtration system in the 1960s, and the construction of the new City Hall and Riverfront Park.

Troy's water filtration plant was named in Buckley's honor.

Buckley spent a great deal of time in the Office of Alumni Relations in his volunteer role as tour program manager. "He was an important part of our staff," notes Jeff Schanz, acting director of alumni relations, "and he was instrumental in moving the travel program forward. We'll miss his dedication, his humor, and his directness. He was a great volunteer, and a good friend."

During this period of transition, contact alumni relations at alumni@rpi.edu or (518) 276-6205 for information.

THANKATHON

The Office of Alumni Relations held the second annual Thankathon in April. The Thankathon concept is a simple one: Rensselaer's best student volunteers—members of the Red & White Student Organization and RenXchange—contacted over 1,000 of the university's best alumni volunteers to simply say "thank you" for their commitment and service to their alma mater. The students reached enrollment managers, mentors, board members, chapter leaders, and Reunion volunteers, as well as countless others. The alumni were gratified that Rensselaer took the time to offer a personal thank you, and especially pleased that the call came from a current student.

Please let us know your new address. Update it electronically on AlumServ, e-mail us at ALUM.MAG@RPI.EDU, or write to: Rensselaer Magazine, Office of Communications, Rensselaer Polytechnic Institute, Troy, NY 12180 or call (518) 276-6531.
MAKING CONNECTIONS

Student/Alumni Partnerships

One of the main goals of the RAA and of the Office of Alumni Relations is to facilitate alumni connections. These connections occur every day among the many members of the Rensselaer network, in classrooms, businesses, virtually, and at social gatherings. What you may not know is that some of the most rewarding partnerships are those that happen when alumni meet future alumni—Rensselaer's current students. Many programs exist to foster interaction between students and alumni, and both groups are realizing the benefits of getting involved; Edith Werpachowski '04 recently discovered for herself the global power of the Rensselaer alumni network.

Werpachowski is vice president for recruitment for the Red & White Student Organization—a group of students who serve as ambassadors for Rensselaer, generate pride in the university, and promote student awareness of the RAA. Activities include interfacing with alumni and community representatives at university events, participating in corporate executive visits, and promoting alumni speaker programs.

Werpachowski, a chemical engineering student, attended an alumni dinner last fall and was seated with Jonathan Dordick, the Howard P. Isermann '42 Professor of Chemical Engineering, and Howard Isermann '42 himself, the former trustee for whom the department is named. Werpachowski expressed her desire to experience different cultures while expanding her skills in her chosen field. Dordick was able to provide her with a contact at BASF in Germany, where she was able to land a great summer internship.

"I'm excited about this opportunity because I am minoring in German," says Werpachowski. "It will allow me to work in my field of study in Germany at one of the world's most successful chemical companies."

Connecting with students can be rewarding on many levels. Look for opportunities to meet current students at affinity and regional chapter events, on campus at dinners, Reunions, and seminars, and virtually on Web discussion groups and listservs. You just might be able to make a difference in a student's life, and enrich your own in the process.

Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205.

Edith Werpachowski '04 discovered the power of the Rensselaer network when she landed an internship in Germany through contacts she made as a member of the Red & White Student Organization.
Solid Foundation

John Muller '03, past president of the Interfraternity Council and a member of the Rensselaer Society of Engineers, is ready to change the world. With a solid foundation from Rensselaer, he and more than 1,500 recent graduates are prepared to be the next generation of innovators, thinkers, and problem-solvers who will meet the challenges of the 21st century.

Your gift helps to support students like John and his classmates who are building on the tradition of changing the world. Support Rensselaer by making a gift today at www.alumni.edu/tradition or contact Terri Van Patten, assistant vice president for development and alumni relations, at vanpat@rpi.edu or (518) 276-8215.
MATERIAL WHIRLED

Any material can be improved. It starts at the atomic level – and with the pioneering research of Pulickel Ajayan, professor of materials science and engineering at Rensselaer.

From quantum wires to revolutionary composites of polymers, metals, and ceramics, Ajayan’s work in nanotechnology may re-engineer the world as we know it.

Learn more.

Pulickel M. Ajayan
Professor
Department of Materials Science & Engineering

why not change the world? www.rpi.edu/wnctw

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