For more than a century, Rensselaer has awarded the Rensselaer Medal to high school juniors who have distinguished themselves in mathematics and science. At Honors Convocation last fall the Institute celebrated the 100th anniversary of the Rensselaer Medal. To date, 5,643 alumni and alumnae have received the award. For more, see page 15.
Rensselaer marked the 75th anniversary of the founding of the Naval ROTC campus unit last fall. See page 17.

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Update your address via email at alum.mag@rpi.edu, or write to: Rensselaer Magazine, Office of Strategic Communications and External Relations, Rensselaer Polytechnic Institute, Troy, NY 12180, or call (518) 276-2800.
This year, as part of the National Manufacturing Day program hosted by the School of Engineering, members of the campus, area students, and the local community had the unique opportunity to get an up-close view of a Sikorsky UH-60 Black Hawk helicopter on ‘86 Field.

Nearly 300 high school students from around the Capital Region visited campus to attend the National Manufacturing Day program. Ryan Patry ’00, who serves as manager of manufacturing technology for manufacturing engineering at Sikorsky Aircraft, delivered the keynote address.

“Advanced manufacturing is critical for accelerating American innovation, for translating American science and technology into new products, and for creating high-paying jobs around the country, New York state, and in the Capital Region,” says Shekhar Garde, dean of engineering. "Rensselaer has been a leader in manufacturing engineering education for many years. National Manufacturing Day is a powerful tool to excite young people about manufacturing, to show them how technology can and does change the world, and to inspire them to pursue careers in science, technology, engineering, and math.”
Our vision for Rensselaer as “The New Polytechnic” includes serving as a great crossroads for accomplished people in many different fields. We are succeeding magnificently on this front. During the course of just a few weeks this fall, we were able to introduce our students, faculty, staff, and alumni and alumnae to a remarkable group of distinguished visitors.

For Reunion & Homecoming, we held a lively panel discussion with three of the greatest inventors in Rensselaer history: Dr. Ted Hoff ’58, the inventor of the microprocessor; Mr. Steve Sasson ’72, the inventor of the digital camera; and Dr. Jayant Baliga ’74, the inventor of the insulated gate bipolar transistor, a power semiconductor device which has greatly improved energy efficiency in systems and machines of all kinds. All three are laureates of the National Medal of Technology and Innovation, and I, as a National Medal of Science laureate, was honored to moderate the panel.

Dr. Baliga delighted the audience by recounting his research as a Rensselaer doctoral student on gallium indium arsenide films for high-speed transistors. His adviser, the formidable Professor Sorab Ghandhi, suggested that Dr. Baliga try using three compounds to create the films. When Dr. Baliga pointed out that two of those compounds detonate on contact with air, and the third is an extremely poisonous gas, Dr. Ghandhi shrugged, “Don’t worry. I will buy you a canary.” At Rensselaer, Dr. Baliga said, he learned that great achievements require great risks.

Mr. Sasson spoke thoughtfully about the cultural and artistic implications of the digital camera, reinforcing the value of current Rensselaer initiatives such as Art_X, which seek to offer technologically savvy students a new vocabulary for creativity. When asked what is happening to the art of photography—now that photographs are taken for casual communication, rather than for beauty—Mr. Sasson assured the audience that great photographers are great storytellers, so the art is not about to disappear: “The camera is just a tool; it is the story that matters.”

Mr. Hoff emphasized the importance, as an engineer, of being attuned to the realities of business. In 1969, the fledgling Intel had agreed to build a calculator for a Japanese company. Mr. Hoff recounted that in looking over the multi-chip design, “I knew enough about our cost structure to know that we could not do it at the quoted price.” Encouraged by founder Robert Noyce to fix the problem, he decided to design “a really simple little computer that I could program to perform every one of the functions of the chips requested.” The microprocessor was born, and the rest is history.

Two weeks later, we also brought to campus Dr. Thomas Cech, recipient of the 1989 Nobel Prize in Chemistry for his discovery that RNA catalyzes biochemical reactions as well as conveys genetic information. Dr. Cech was the inaugural lecturer in a series endowed by Dr. Georges Belfort, Institute Professor in our Howard P. Isermann Department of Chemical and Biological Engineering, and Dr. Marlene Belfort, Distinguished Professor of Biology at the University at Albany. Dr. Cech drew a standing-room-only crowd for a talk on using CRISPR genome editing to illuminate the action of telomerase—the enzyme that controls the telomeres, or the protective caps at the end of each chromosome.

The relatedness of all fields of endeavor—and the importance of making connections between them—was underscored when, in early November, we welcomed then Director of the Central Intelligence Agency John Brennan, whom I had gotten to know in my role as co-chair of the President’s Intelligence Advisory Board, to the EMPAC Concert Hall. Director Brennan’s speech and the fireside chat he had with me emphasized the societal implications of all forms of technological progress—including the biosafety issues raised by new technologies such as CRISPR.

He offered the Internet of Things as a prime example: “We know the role of government is to protect our streets. But there is not a national consensus right now about what the government’s role is in the digital domain. A lot of people see that if the government is operating there, it is an invasion of privacy.” At the same time, he pointed out how many human interactions occur in the digital space, and the danger of allowing it to be a “safe harbor” for terrorists and criminals.

At the end of our chat, Director Brennan graciously answered dozens of questions from Rensselaer students eager to hear his thoughts.

We are delighted to draw such visitors to The New Polytechnic, and to allow our students to interact with them. The result is not just education, but also inspiration.

Varying voices add to the richness of a Rensselaer education.

We are delighted to draw such visitors to The New Polytechnic, and to allow our students to interact with them. The result is not just education, but also inspiration.

Dr. Thomas Cech, recipient of the 1989 Nobel Prize in Chemistry, spoke to campus.
I’m Patrick Celentano, the horn player from the cover of the Spring 2016 issue of this magazine. I am responding to Doug Heydon ’51, who wrote about “A Long Musical History” in the Fall 2016 issue.

When reading your article, I could scarcely believe the overlap in our stories... Queens-born, but Texas-raised, most of my friends were surprised that I chose some far-away tech school in upstate New York for college. It’s true that there were excellent options in-state, but this place was... different. It had everything I was looking for, and conveniently put me only a few hours away from the rest of my family.

We happen to both play the French horn. Stranger still, I almost didn’t play it, given that all I knew about brass instruments back in the sixth grade was that trumpets were the loud ones. Just like you, the constant shortage of horn players prompted my director to recommend horn. I tried it, liked it, and stuck with it.

Throughout middle and high school, I played in all the groups available to me—concert bands, marching bands, and even a brass quintet. There was, alas, no orchestra, much to my disappointment. As I began to explore Debussy and Wagner, Dvorak and Grainger, I kept wishing I had an orchestra to play in.

Then came senior year, and with it, college admissions. When I first applied to RPI, I figured that it was the end of my horn playing. I assumed that this was simply what one did when they became an adult—they put away grade school hobbies, and picked up their careers. After all, what use is a big spiral tube of metal to a computer scientist?

But then I arrived on campus, in August 2014. Nervous about my skill level, but encouraged once again by a dearth of horn players, I auditioned for the orchestra under the fantastic direction of Nicholas DeMaison. To my delight, I got in, and have since had the time of my life, playing Handel and Grieg, Dvorak and Tchaikovsky. If anyone reading this has not had the opportunity to perform works from such masters, it’s hard to describe what makes these experiences so magnificent.

So, Mr. Heydon, thank you sincerely for writing in—never did I expect to be on the cover of a magazine, much less to get this sort of perspective on my own college experience. On campus, I see plaques to all manner of great men and women who have come before me, but to hear from someone who in many ways has led the life I now lead... It’s as inspiring as it is humbling.

In a way, music has brought our own life experiences together in a way few would expect from an engineering school. Except—that’s the thing. I have come to expect it.

Music has brought our own life experiences together in a way few would expect from an engineering school. Except—that’s the thing. I have come to expect it.

That compilation challenged the reader to look past the decay and faux façades to see the significance of the original structures, and formed a starting point for me to discover as much as I could about the city.

I was so intrigued by the city’s past, its then-current state of neglect and decay, and its potential that I chose to focus my fifth-year design thesis on a redevelopment of Troy’s waterfront. After all, it was the Hudson River that carried the goods shipped along the canal that built the city. Yet rows of old and abandoned warehouses and underutilized commercial buildings along River Street all but obscured the view of the river. I proposed cutting through some of these buildings, extending the sight lines of the city’s street grid, and turning the riverfront into a pedestrian-oriented park.

Reading about the new commercial businesses locating in the city, the restoration and reuse of many of the city’s landmark structures, and the upscale retail shops that have since opened was more than gratifying. Thank you for including that inspiring article in the alumni magazine.

Michael Goldfinger ’67
Rockville, Maryland

We would love to hear from you! To provide space for as many letters as possible, we often must edit them for length. Contact us at: Rensselaer Magazine, Strategic Communications and External Relations, Rensselaer Polytechnic Institute, Troy, NY 12180; or email us at alum.mag@rpi.edu.
A comet strike may have triggered the Paleocene-Eocene Thermal Maximum (PETM), a rapid warming of the Earth caused by an accumulation of atmospheric carbon dioxide 56 million years ago, which offers analogs to global warming today. Sorting through samples of sediment from the time period, researchers at Rensselaer discovered evidence of the strike in the form of microtektites—tiny dark glassy spheres typically formed by extraterrestrial impacts.

“This tells us that there was an extraterrestrial impact at the time this sediment was deposited—a space rock hit the planet,” says Morgan Schaller, assistant professor of earth and environmental sciences. “The coincidence of an impact with a major climate change is nothing short of remarkable.”

Schaller was searching for fossilized remains of *Foraminifera*, a tiny organism that produces a shell, when he first noticed a microtektite in the sediment he was examining. Although it is common for researchers to search for fossilized remains in PETM sediments, microtektites have not been previously detected. Schaller and his team theorize this is because microtektites are typically dark in color, and do not stand out on the black sorting tray researchers use to search for light-colored fossilized remains. Once Schaller noticed the first microtektite, the researchers switched to a white sorting tray, and began to find more.

At peak abundance, the research team found as many as three microtektites per gram of sediment examined. Microtektites are typically spherical, or tear-drop shaped, and are formed by an impact powerful enough to melt and vaporize the target area, casting molten ejecta into the atmosphere. Some microtektites from the samples contained “shocked quartz,” definitive evidence of their impact origin, and exhibited microcraters or were sintered together, evidence of the speed at which they were traveling as they solidified and hit the ground.
President Shirley Ann Jackson recently returned from the 2017 World Economic Forum Annual Meeting, held in Davos, Switzerland, January 17-20. The theme for this year’s meeting of global decision-makers was “Responsible and Responsive Leadership.”

President Jackson has participated in this annual gathering of thought leaders in the Swiss Alps since 2008. A record 3,000 participants took part in over 400 panels, sessions, and conversations.

On the first day of the meeting, Jan. 17, President Jackson took part in a panel discussion on “Leadership in the Age of Political Risk.”

She also co-led a Humanitarian Hub informal dialogue about “Measuring for Maximum Impact” with Kamalini Lokuge of the Humanitarian Research Program at Australian National University. The two led a conversation about the ways that data science can help us to better understand environmental health threats to children.

Later that day, President Jackson led a conversation that explored how museums and universities can (and already do) work with corporate partners to address global challenges. Panelists included Peter Salovey, president, Yale University; Lonnie Bunch, founding director, National Museum of African American History & Culture, Smithsonian Institution; and Franz Paasche, senior vice president, corporate affairs, PayPal.

On Jan. 18, President Jackson moderated a panel on “The Future of Warfare.” The digital revolution is blurring the lines between war and peace and expanding the boundaries of the battlefield to new domains. How can we prepare for a new kind of war? The panel featured an intense discussion, led by President Jackson, with Jean-Marie Guéhenno, International Crisis Group; Sir Lawrence Freedman, Kings College; Mary Cummings, Duke University; and Jeanine Hennis-Plasschaert, Minister of Defense, Netherlands.

Later that day, she moderated a panel on “Powering Mobility,” which focused on the intersections between technological advances in the transportation sector and in the energy sector, and their potential to drive a clean energy revolution that encompasses cars, buses, urban planning, and energy generation for homes and businesses.

On Jan. 20, President Jackson participated in a panel on “Cyber War: From attacks on critical infrastructure to attempts at sabotage of political processes, has the first cyber war already begun?”

She concluded her participation as a panelist discussing “The Global Security Outlook.” The panelists talked about the biggest challenges and opportunities in 2017.

While she was in Davos, President Jackson was interviewed by World Economic Forum staff for the forum’s annual Davos documentary. This year’s documentary explores the concept of responsive leadership, with a focus on female leaders. She was also interviewed by HUB Culture’s Edie Lush, on the topic of women in STEM and leadership.

Recent Breakthroughs

Multifunctional Protein-Delivery Gold Nanocages
Hollow gold nanocages are powerful vehicles for the transport and administration of therapeutic agents, bioactive compounds, biomolecular reagents, biocatalysts, and other molecular compounds. However, better control of the cages’ content is needed. To increase bioavailability of contents, researchers at Rensselaer created a porous, large surface-to-volume ratio nanocube with payload molecules electrostatically adsorbed onto their surfaces. These highly biocompatible particles can be tailored for controlled duration and bioavailable concentration of payload molecules. The sustained release of proteins and their unique design make them useful for applications like drug delivery and photothermal ablation of tumors. The tenability, strong scattering, and adsorption peaks in the near-infrared region make these gold nanocages useful for biomedical imaging.

Nanocomposite Scaffold for the In Vitro Isolation of Cancer Cells
Current chemotherapy strategies struggle to deal with the variability of cancer from patient to patient. Individualized treatment could be more successful, yet cancer cells from each patient must be isolated and analyzed. Previous methods lack specificity and typically rely on techniques likely to alter the cancer cells disrupting individualized treatment. A team led by Rensselaer Biomedical Engineering Associate Professor Ryan Gilbert invented an inexpensive device to effectively isolate cancer cells from a tumor sample, advancing further experimentation in cancer cell identity. The device has three main components: a layer of very fine electrospun fibers, a protein coating layer that includes at least two different proteins to promote growth of distinct cell types, and nanospheres containing chemo-attractants for cancer and healthy cells. By allowing the nanospheres containing chemo-attractants to promote growth of distinct cell types, and that includes at least two different proteins in cancer cell identity. The device has three main components: a layer of very fine electrospun fibers, a protein coating layer that includes at least two different proteins to promote growth of distinct cell types, and nanospheres containing chemo-attractants for cancer and healthy cells. By allowing the nanospheres containing chemo-attractants to promote growth of distinct cell types, and that includes at least two different proteins in cancer cell identity.

Hollow gold nanocages are powerful vehicles for the transport and administration of therapeutic agents, bioactive compounds, biomolecular reagents, biocatalysts, and other molecular compounds. However, better control of the cages’ content is needed. To increase bioavailability of contents, researchers at Rensselaer created a porous, large surface-to-volume ratio nanocube with payload molecules electrostatically adsorbed onto their surfaces. These highly biocompatible particles can be tailored for controlled duration and bioavailable concentration of payload molecules. The sustained release of proteins and their unique design make them useful for applications like drug delivery and photothermal ablation of tumors. The tenability, strong scattering, and adsorption peaks in the near-infrared region make these gold nanocages useful for biomedical imaging.

To learn more, go to www.rpitechnology.com or email otc@rpi.edu.

BOARD OF TRUSTEES

New Leadership Takes the Helm

Rensselaer has announced that Arthur F. Golden ’66 has been elected chair of the Rensselaer Board of Trustees, Wanda Denson-Low ’78 has been elected vice chair, and Curtis R. Priem ’82 has been elected secretary.

“We are grateful for the wisdom and partnership of these dedicated Rensselaer graduates, who as board members, have helped to guide Rensselaer in its transformation,” says President Shirley Ann Jackson. “We look forward to working with them to develop our students into the leaders who will solve the great global challenges of our time.”

Golden succeeds the Honorable Arthur J. Gajarsa ’62 as chair of the board. Golden joined the Board of Trustees in 2005 and has served on the Executive Committee, Investment Committee, and Audit Committee. He also served as chair of the Student Life Committee.

Golden is global co-chairman of Davis Polk & Wardwell LLP’s mergers and acquisitions practice, the senior Davis Polk partner, and for nine years was a member of the firm’s Management Committee. He is also the senior independent member of the board of directors of Emerson Electric. He regularly represents large multinational companies with respect to acquisition-related transactions; advises clients on corporate governance matters, shareholder activism, and defensive matters; and is the senior partner in the firm’s practice in competition and antitrust matters.

Denson-Low retired in 2014 from her position as the senior vice president of the Office of Internal Governance for The Boeing Company, the world’s leading aerospace company. She was a member of the company’s executive council, and was named senior vice president in May 2007. She was responsible for the management and oversight of compliance, internal audit, ethics and business conduct, and global trade controls, which include all import and export activities for the entire Boeing Company.

Priem co-founded NVIDIA Corp., a manufacturer of graphics and multimedia integrated circuits, in 1993 and was its chief technical officer from 1993 to 2003. From 1986 to January 1993, Priem was senior staff engineer at Sun Microsystems, where he architected the GX graphics products, including the world’s first single chip GUI accelerator. From 1984 to 1986, Priem was a hardware engineer at GenRad Inc., a supplier of diagnostic equipment for electronic products. In recognition of his historic $40 million unrestricted gift, Rensselaer named the Experimental Media and Performing Arts Center (EMPAC) in his honor.
CAN A DIET HIGH IN PROCESSED FAT AND SUGAR and Type 2 diabetes cause degeneration of intervertebral discs in the spine? If so, what is happening, and can it be prevented? As part of an ongoing collaboration between Rensselaer and the Icahn School of Medicine at Mount Sinai, researchers hope to answer those questions by investigating the link between diet, obesity-linked Type 2 diabetes, and intervertebral disc degeneration.

Researchers on the project suspect that the diet associated with Type 2 diabetes—one high in processed fats and sugars—causes inflammation and modification of disc tissue, triggering a chain of responses, which leads to degeneration. To test this hypothesis, the researchers have set three goals: to establish whether mice fed a diet associated with Type 2 diabetes will develop intervertebral disc degeneration, to isolate the effect of diet causing changes in the tissue, and to evaluate how the diet modifies proteins within the disc.

The project is supported by a $3.3 million grant from the National Institutes of Health and is led by Dr. James Iatridis, a professor and vice chair for research in the orthopaedics department at the Icahn School of Medicine.

Deepak Vashishth, professor of biomedical engineering and the Rensselaer lead on the project, says the partnership makes it possible to tackle a project of this complexity. "We're trying to establish the mechanism whereby this diet, and Type 2 diabetes, leads to disc degeneration, and that's not an easy thing to do because, within the body, various processes are linked and feedback loops are difficult to unravel," says Vashishth, who is also the director of the Center for Biotechnology and Interdisciplinary Studies. "To investigate this question, you need the mix of experts from different disciplines with different skill sets that the partnership allows."

**Biomedical Engineering**

**Diet and Back Pain: What’s the Link?**

REUNION & HOMECOMING

Panel Features Creators of Transformative Innovations

PRESIDENT SHIRLEY ANN JACKSON, recipient of the 2014 National Medal of Science, led a panel discussion with three alumni who are recipients of the National Medal of Technology and Innovation at an event held during Reunion & Homecoming weekend in October. Titled “Creative Connections, Transformative Innovations,” the symposium included B. Jayant Baliga, Ph.D. ’74, inventor of power electronics devices, Marcian “Ted” Hoff ’58, inventor of the microprocessor, and Steven J. Sasson ’72, inventor of the digital camera.

What the laureates and other impactful scientists and inventors truly have in common, President Jackson said in her remarks, is a “willingness to ignore conventional wisdom and to see potential where others saw dead ends.”

Jayant Baliga ’74, who earned his master’s and doctorate in electrical engineering at Rensselaer, received the 2010 National Medal of Technology and Innovation for development and commercialization of the insulated gate bipolar transistor and other power semiconductor devices that are extensively used in transportation, lighting, medicine, defense, and renewable energy generation systems.

Marcian E. “Ted” Hoff ’58, along with Stanley Mazor and Federico Faggin, received the 2009 National Medal of Technology and Innovation for the conception, design, development, and application of the first microcomputer. The subsequent commercial acceptance of this universal building block enabled a multitude of novel digital electronic systems, from traffic lights and countless small appliances and electronics, to automobiles.

Steven J. Sasson ’72, who earned his bachelor’s and master’s degrees in electrical engineering at Rensselaer, received the 2009 National Medal of Technology and Innovation for the invention of the digital camera, which has revolutionized the way images are captured, stored, and shared, thereby creating new opportunities for commerce, education, and improved worldwide communication.

The work that Hoff, Sasson, and Baliga have done, President Jackson said, laid the foundation for creating the types of devices that are now commonplace in our everyday lives, and opened the door for further advancements from new scientists and innovators.
Our students are the future leaders who will leave their mark on the world. Rensselaer students share a legacy of academic achievement, discovery and innovation, entrepreneurship, creative expression, and global leadership. Rensselaer held its Inaugural Scholarship Gala—and announced that is has raised over $24 million in scholarship support in the last two years—at the Mandarin Oriental in New York City Nov. 17. More than 280 guests joined in celebration of the inaugural event.

The gala raised critical support for the Institute’s scholarship initiative, Bridging the Gap, and presented its newest honor, the Presidential Lifetime Achievement Award, to three longtime Rensselaer partners and supporters—IBM, Howard Blitman, P.E. ’50, and Curtis Priem ’82.

The Inaugural Scholarship Gala was established to encourage support for endowed scholarships that will enable Rensselaer to meet the full financial aid need for students, nearly half of whom require aid, thus “Bridging the Gap” between student need and institutional support. The gala was made possible, in part, by the support of two dozen corporate sponsors, including IBM, Bank of America Merrill Lynch, the Whiting-Turner Contracting Company, and SI Group.

In advance of the gala event, the following donors had kick-started the effort by donating a million dollars or more to create endowed undergraduate scholarships: The Priem Family Foundation, Kathleen and Paul Severino ’69, Wanda Denson-Low ’78 and Ronald Low, Jeanne Page Fischer and Frank Fischer ’64, and Rensselaer President Shirley Ann Jackson and her husband, Morris Washington.

“We are grateful for the generosity of our donors—for your investment in the future of Rensselaer, in the future of talented young people of modest means, and in the future of the world they will change for the better,” said President Jackson. “I am proud to be counted among you, both as a former scholarship recipient, and as a current supporter.”

The Presidential Lifetime Achievement Award recognizes extraordinary service, philanthropy, and long-standing partnerships with Rensselaer.

“At Rensselaer, we are transformative in the global impact of our research, in the remarkable education we offer our students, and in their lives, as well,” said President Jackson, in presenting the awards. “But none of this is possible without partnerships, and without philanthropy. Tonight, we honor three towering figures in our present and...
future with the Presidential Lifetime Achievement Awards.”

Howard Blitman is a consulting engineer and president of The Blitman Building Corporation. His career accomplishments span institutional, academic, residential, commercial, and military construction. He was named a fellow of the American Society of Civil Engineers in 2005.

Blitman has been active at Rensselaer as a trustee, adviser, volunteer, and philanthropist. He has established a professorship in engineering, a fellowship sponsored by alumni in construction, and a gift to the endowment that led to the successful conversion of a hotel in downtown Troy into an engaging living space for students, benefiting both the university and the city of Troy.

Curtis Priem is an inventor who has authored almost 200 patents, all of which relate to graphics and input/output. He designed the first graphics processor for the PC, the IBM Professional Graphics Adapter, and was a co-founder and chief technical officer of NVIDIA Corp., a manufacturer of graphics and multimedia integrated circuits.

Priem has served on the Rensselaer board since 2004. In recognition of his historic gift to the Institute, Rensselaer named the Experimental Media and Performing Arts Center in his honor. His philanthropy has supported faculty, research, and undergraduate scholarships.

Ginni Rometty, chairman, president, and chief executive officer of IBM, accepted the award for IBM. Rometty began her career with IBM in 1981 and rose to become the first woman to lead the company. The Rensselaer-IBM partnership dates back decades to the revolutionary IBM System/360, first announced in 1964. Today, IBM is engaging with Rensselaer in joint investigations that include the Institute’s IBM Blue Gene/Q supercomputer, the most powerful supercomputer at an American private university; the Jefferson Project on Lake George, which is using advanced data analytics and visualization tools to investigate the stressors on water quality; and the Cognitive and Immersive Systems Laboratory, which merges human cognition and artificially intelligent cognitive systems in pushing the frontiers of knowledge.

“I wanted to be a part of something that could continue to engage you half a century later. I can’t yet give back to Rensselaer in the manner you all can, but I have been able to give back to the community by excelling as a student leader.”

“My generosity doesn’t just touch the lives of the scholarship recipients; it also touches the lives that cross paths with the recipients—we might not be able to say ‘thank you’ directly, so we often show gratitude by being of service to the community.”

Mary Votto ’17

I AM LUCKY TO BE THE RECIPIENT OF two scholarships at Rensselaer, scholarships that have made my dream of a higher education at Rensselaer come true. This May, I will graduate with a B.S. in Civil Engineering and may even pursue a graduate degree at Rensselaer.

Rensselaer was always my goal based mostly on its academic reputation and offerings. I have a family friend who graduated in the Class of 1962 and his passion for the school 50 years after graduating was one of the biggest influences in my desire to come here.

I wanted to be a part of something that could continue to engage you half a century later. I can’t yet give back to Rensselaer in the manner you all can, but I have been able to give back to the community by excelling as a student leader.

“I’ve served as president of the Resident Student Association and the National Residence Hall Honorary. I have had the role of Resident Assistant and Resident Director, where I have the opportunity to impact the lives of students every day. You see, your generosity doesn’t just touch the lives of the scholarship recipients; it also touches the lives that cross paths with the recipients—we recipients might not be able to say ‘thank you’ directly, so we often go out of our way to show gratitude by being of service and committing to the community we’re so grateful to be a part of.”

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RENSSLEAER HAS BEEN RANKED AS ONE OF the 10 Best Business Schools in New York by College Choice, a leading authority in college and university rankings and resources. Rensselaer ranked third on the 2016 list after New York University and Cornell University.

“Rensselaer’s Lally School of Management has produced graduates who work for Facebook, Google, Goldman Sachs, and more. Getting your bachelor in business at Lally School of Management can place you in an excellent position for highly competitive jobs,” stated College Choice in its description of Rensselaer.

“We are delighted to rank among the top three business schools in New York state,” says Lally Dean Thomas Begley. “It is a welcome acknowledgement of the quality of education we provide to our students, who have the opportunity to interact with leading scientists, engineers, and entrepreneurs, access powerful computing resources, and apply cutting-edge management research to solve real-world business challenges.”

Criteria for the College Choice rankings included academic reputation and student retention, a school’s business school program features and national rankings, tuition, and internship opportunities.

The Lally School of Management was founded in 1963. Building on Rensselaer’s world-class facilities and leadership in science and engineering, the Lally School is dedicated to advancing business through innovation. Lally School programs focus on the strategic management of technology and creating value through innovation and entrepreneurship.

Rensselaer hosted John O. Brennan, former director of the United States Central Intelligence Agency (CIA), for a conversation on “Technological Change and National Security” with President Shirley Ann Jackson in November.

Essential networks at risk of cyber-attack, terrorists’ use of social media to recruit and direct followers, biotechnology techniques for rapid gene editing—the wide-ranging conversation touched on threats and opportunities technology has enabled.

Brennan offered a perspective informed by a career in intelligence. Brennan was sworn in as director of the CIA in 2013, but his career with the agency began in 1980. Much of his early career was devoted to the Directorate of Analysis, specializing in the Near East and South Asia. He directed counterterrorism analysis in the early 1990s, served as the agency’s intelligence briefer to President Bill Clinton in 1994 and 1995, and served as chief of staff to CIA Director George Tenet from 1999 to 2001, deputy executive director from 2001 to 2003 (helping to launch the National Counterterrorism Center), and interim director from 2004 to his retirement in 2005. He rejoined the agency as its director.

In answering questions, Brennan addressed current threats: the frustration of a newly aggressive Russia, terrorist platforms based on a perversion of religion, a rise in nationalism in the developed world, and a pervasive dissatisfaction with the status quo.

Climate change, and the wide-scale disruption of the environment, is likely to increase tensions within and among nations. And cyber revolution is creating vulnerability for the United States and our allies, at the same time that the country grapples with the role of government in the digital domain, Brennan said.

In his own work, Brennan said he has worked to ensure that digital innovation empowers the agency and fosters interactions.

Given security requirements, invitations to the event were restricted to Rensselaer faculty, students, and staff. Following the conversation, Brennan met with a cross section of students from the schools of Engineering and Science and from the Reserve Officers’ Training Corps.
NEARLY 1,700 STUDENTS—REPRESENTING the largest incoming class in the Institute’s history—joined Rensselaer this fall. The students hail from 47 states, the District of Columbia, Puerto Rico, and from countries all around the world.

68 percent ranked in the top 10 percent of their high school graduating class, while 99 students were valedictorians or salutatorians of their high school graduating class. Of the 18,524 high school students who filed applications to attend Rensselaer this fall, the first-year students hail from 47 states, the District of Columbia, Puerto Rico, and from countries all around the world.

The high-achieving group includes 544 women, representing 32 percent of the class; and 281 underrepresented minority students, representing 16 percent of the class. The continued geographic and international diversity of the incoming class reinforces the global reach and global impact of Rensselaer.

“We are proud of the fact that the Class of 2020 is not only the largest incoming freshman class in the history of Rensselaer, but also one of the strongest academically,” says Jonathan Wexler, vice president for enrollment management. “This is the most academically, ethnically, and geographically diverse incoming class in the history of Rensselaer!”

The overall class SAT average was 1370 based on the 1600 scale and 195 incoming students received a perfect 800 SAT critical reading, math, or writing score. Four students scored a 1600 on the critical reading and math portions of the exam. In the incoming class, 99 students were valedictorians or salutatorians of their high school graduating class, while 68 percent ranked in the top 10 percent of their class.

A record total of 18,524 high school students filed applications to attend Rensselaer this fall, according to the Office of Admissions.

COMPUTER SCIENCE

A Guide to Artificial Intelligence Technologies in Social Interactions

WILL ARTIFICIAL INTELLIGENCE IMPROVE OUR lives, or will it bring on the robot apocalypse? Absent an understanding of artificial intelligence (AI)—its evolution, its potential, and its limitations—it’s hard for citizens and policymakers to construct an informed opinion. Social Machines: The Coming Collision of Artificial Intelligence, Social Networking, and Humanity (Apress, 2016), a new book by scholars James Hendler and Alice Mulvehill, helps readers critically evaluate the burgeoning partnership between humans and AI.

“In considering the future of AI, optimists see reasons for hope while pessimists see reasons for fear,” says Hendler, director of the Rensselaer Institute for Data Exploration and Applications (IDEA) and the Tetherless World Professor of Computer, Web, and Cognitive Sciences. “We are convinced that the truth lies somewhere in between and want to help readers to better form their own opinions.”

As the name implies, Social Machines focuses on AI technologies that, propelled by the rise of social networking, play a growing role in our social spaces through computers in our phones, our homes, and our cars. Although such interactions primarily occur between people, with breakthroughs in AI, the “person” at the other end of the connection may also be a computer. From self-driving cars to Siri and Alexa, these new tools are increasingly useful, and increasingly knowledgeable about us.

“Social interactions with machines provide them with new data about us and our world. As AI systems evolve, we must understand how this information will change our lives as it is used by industrial, government, or even adversarial organizations,” says Hendler.

The challenge lies in understanding AI technologies and how they impact the world in which we live. Social Machines, written for the non-specialist, introduces the reader to the cognitive aspects of AI, and explains how to get the best from machines while still ensuring human safety and security.

Gaming is one example of how the partnership can work best. Chess centaurs—where each team is half-human, half-computer—have outperformed the best humans and the best computers. Similarly, a computer can help a doctor mine scientific literature to spot a rare disease. But doctors, with their understanding of humanity, need to stay in the loop if treatment is going to be tailored to the physical and psychological needs of individual patients.

Hendler is one of the developers of the “semantic web.” Mulvehill is a research scientist, owner of Memory Based Research LLC, and developer of AI-based systems for DARPA, the Air Force, and NASA. To order the book go to www.apress.com.

ENROLLMENT

Largest Incoming Class in History

NEARLY 1,700 STUDENTS—REPRESENTING the largest incoming class in the Institute’s history—joined Rensselaer this fall. The students hail from 47 states, the District of Columbia, Puerto Rico, and from countries all around the world.

The high-achieving group includes 544 women, representing 32 percent of the class; and 281 underrepresented minority students, representing 16 percent of the class. The continued geographic and international diversity of the incoming class reinforces the global reach and global impact of Rensselaer.

“We are proud of the fact that the Class of 2020 is not only the largest incoming freshman class in the history of Rensselaer, but
Rensselaer Receives All-Steinway School Designation

RENSSELAER HAS JOINED MORE THAN 180 institutions on five continents designated as All-Steinway Schools, dedicated to providing the best instruments possible for the study of music. An official All-Steinway plaque of recognition was presented to President Shirley Ann Jackson during the Institute’s annual holiday concert in December.

In the last five years, Rensselaer has acquired five Steinway grand pianos and six Steinway-engineered studio pianos, as well as a Steinway grand that was donated by Philip Maloof ’58 in honor of his mother and her brothers.

“At Rensselaer, we work to ensure that our students and faculty are able to practice, to compose, and to perform on the very finest of instruments,” says President Jackson. “Our Steinway pianos exemplify the seriousness of our commitment at Rensselaer to the arts, and to the connection between the arts and science and technology. We thank Steinway & Sons for recognizing Rensselaer as a university that provides its students and faculty with the most advanced tools for education, for expression, for collaboration, and for innovation.”

“One of my goals when I came to Rensselaer was to expand upon the media, arts, science, and technology signature research thrust and, more recently, to develop programs around Art X @ Rensselaer, noting the Institute’s commitment to advancing knowledge and culture at the nexus of the arts with large and the STEM disciplines,” says Mary Simoni, dean of the School of Humanities, Arts, and Social Sciences (HASS).

“Steinway awards this designation to music educational institutions in which not less than 90 percent of the pianos, whether in performance venues, teaching studios, or practice rooms, are Steinway instruments, maintained in performance-quality condition by Steinway-certified technicians,” Simoni says. “The recognition from Steinway is testimony to our unwavering dedication to the pursuit of excellence in music.”

“Our organizations have much in common—both established in New York in the 19th century—and both dedicated to the marriage of technology and art,” says Steinway Representative Sally Coveleskie, who attended the concert and presented the plaque.

Robert Godgart ’82

SERIAL ENTREPRENEUR, INVENTOR, AND technology executive Robert Godgart ’82 was selected as the 2016 William F. Glaser ’53 Rensselaer Entrepreneur of the Year.

As a successful entrepreneur, Godgart started five companies and turned them all into market leaders. At Rensselaer, Godgart pioneered early computer applications in architecture and soon launched his first company, Image Systems Technology. The company’s CAD Overlay product would become the world standard to put paper drawings on PC computers for architects and engineers.

Next, Godgart teamed up to create the Capital Region’s first seed venture fund, leading investments in successful Rensselaer companies such as LearnLinc and Vicarious Vision. He started PowerAdz to revolutionize the newspaper industry, putting 1,800 newspapers online. Godgart is most well-known for founding Autotask, the world’s leading information technology business management software; he also started ChannelEyes to reinvent how indirect sales channels are managed. Today, he gives back to the community as an executive coach, mentor, board member, and angel investor who helps CEOs and entrepreneurs accelerate their growth.

“It is a great honor to receive this recognition from Rensselaer; however, it’s also for all the people behind these ventures that made them successful,” says Godgart. “Co-founders, management teams, investors, strategic partners, and most importantly, the employees and their families who spent so much of their lives dedicated to the startup life. I truly hope that my business journey will inspire young RPI entrepreneurs to pursue their technological dreams.”

Godgart received his bachelor’s degree in architecture but ultimately became fascinated with computers. In 1980, before the days of personal computers and cell phones, he spent many nights in the lab pioneering computer applications in architecture.
**BIOTECHNOLOGY**

**Nano-Decoy Lures Human Influenza A Virus to Its Doom**

To infect its victims, influenza A heads for the lungs, where it latches onto sialic acid on the surface of cells. So researchers created the perfect decoy: a carefully constructed spherical nanoparticle coated in sialic acid that lures the influenza A virus to its doom. When misted into the lungs, the nanoparticle traps influenza A, holding it until the virus self-destructs.

In a study on immune-compromised mice, the treatment reduced influenza A mortality from 100 percent to 25 percent over 14 days. The novel approach, which is radically different from existing influenza A vaccines and treatments based on neuraminidase inhibitors, could be extended to a host of viruses that use a similar approach to infecting humans, such as Zika, HIV, and malaria.

"Instead of blocking the virus, we mimicked its target—it’s a completely novel approach," says Robert Linhardt, a glycoprotein expert and the Ann and John H. Broadbent, Jr. ’59 Senior Constellation Professor of Biocatalysis and Metabolic Engineering at Rensselaer, who led the research. "It is effective with influenza and we have reason to believe it will function with many other viruses. This could be a therapeutic in cases where vaccine is not an option, such as exposure to an unanticipated strain, or with immune-compromised patients."

"This could be a therapeutic in cases where vaccine is not an option, such as exposure to a strain, or with immune-compromised patients."

To access the interior of a cell and replicate itself, influenza A must first bind to the cell surface, and then cut itself free. It binds with the protein hemagglutinin, and severs that tie with the enzyme neuraminidase. Influenza A produces numerous variations each of hemagglutinin and neuraminidase, all of which are antigens within the pathogen that provoke an immune system response.

Medications to counter the virus do exist, but all are vulnerable to the continual antigenic evolution of the virus. A yearly vaccine is effective only if it matches the strain of virus that infects the body. And the virus has shown an ability to develop resistance to all neuraminidase inhibitors, which bind to and block neuraminidase.

The new solution targets an aspect of infection that does not change: all hemagglutinin varieties of influenza A must bind to human sialic acid. To trap the virus, the team designed a dendrimer, a spherical nanoparticle with treelike branches emanating from its core. On the outermost branches, they attached molecules, or "ligands," of sialic acid.

"The major accomplishment was in designing an architecture that is optimized to bind so tightly to the hemagglutinin, the neuraminidase can’t squeeze in and free the virus," says Linhardt. "It’s trapped."

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**SCHOLARSHIP**

**100 Years of the Rensselaer Medal**

FOR MORE THAN A CENTURY, RENSSELAER, IN conjunction with high schools around the world, has awarded the Rensselaer Medal to promising high school juniors who have distinguished themselves in mathematics and science. This year marks the 100-year anniversary of the Rensselaer Medal. To date, 5,643 alumni and alumnae have received the award.

Today, a merit scholarship, with a value of $25,000 per year, is guaranteed for four years (five years for the bachelor of Architecture program and students enrolled in a co-terminal program) for each medalist who is accepted and enrolls at Rensselaer.

"The Rensselaer Medal is a wonderful way to pay tribute to the high school students who have achieved excellence in math and science," says Jonathan Wexler, vice president for enrollment management.

"As we do so, we are aware that these early achievements, as impressive as they are, mark only one milestone on their future journeys of commitment to hard work, drive, focus, and collaborations. The Rensselaer Medal winners represent the next generation of leaders, scientists, innovators, artists, scholars, game designers, architects, humanitarians, and entrepreneurs."

The Rensselaer Medal was first presented in 1916 with two purposes: to recognize the superlative academic achievement of young men and women, and to motivate students toward careers in science, technology, engineering, and mathematics (STEM) disciplines. The medal, the oldest prize of its kind in the United States, is on a par with the Harvard Book Award and the Brown Book Award as one of the most celebrated recognitions of excellence in secondary school education.

At its inception, the program was instituted in more than 800 schools. By 1950, approximately 1,000 schools awarded the medal.

Today, the medal is awarded at more than 4,000 high schools throughout North America, Latin America, Europe, and Asia.
The Smithsonian National Museum of African American History & Culture (NMAAHC), the only national museum devoted exclusively to the documentation of African-American life, history, and culture, officially opened its doors on Sept. 24. President Shirley Ann Jackson was one of several notable guests who spoke during the grand opening ceremony for the museum.

NMAAHC was established by an act of Congress in 2003, establishing it as part of the Smithsonian Institution, following decades of efforts to promote and highlight the contributions of African-Americans. The NMAAHC is a public institution open to all, where anyone is welcome to participate, collaborate, and learn more about African-American history and culture, according to the pillars upon which NMAAHC stands. In the words of Lonnie G. Bunch III, founding director of the NMAAHC, “There are few things as powerful and as important as a people, as a nation that is steeped in its history. This is America’s story and this museum is for all Americans.”

The Smithsonian Board of Regents, the governing body of the Institution, voted in January 2006 to build the museum on a five-acre site on Constitution Avenue between 14th and 15th streets N.W. in Washington D.C. The site is between the Washington Monument and the Smithsonian’s National Museum of American History.

“We have furthered the Smithsonian’s founding mission, to promote ‘the increase and diffusion of knowledge,’” by opening a museum dedicated to the African-American experience in the United States, and its crucial place in the American experience,” said President Jackson, who also serves as vice chair for the Smithsonian Board of Regents. Dedication ceremony speakers included President Barack Obama; Smithsonian Secretary David Skorton, who received an honorary Doctor of Humane Letters degree during Rensselaer’s 210th Commencement Ceremony; Congressman John Lewis (D-Ga.), a veteran of the civil rights struggle of the 1960s, who received an honorary Doctor of Laws degree during Rensselaer’s 207th Commencement Ceremony; former President George W. Bush and former first lady Laura Bush; and Chief Justice of the United States John G. Roberts Jr., chancellor of the Smithsonian; along with President Jackson and NMAAHC Founding Director Lonnie Bunch.

“The opening of the National Museum of African American History & Culture and the future of natural history museums in the 21st century are subjects of great relevance to Rensselaer faculty and students, given our leadership in technologies with the potential to transform the museum experience, including cognitive and immersive systems, and data science and visualization,” President Jackson noted.

GLOBAL RECOGNITION

Celebrating the Past, Present, and Future of the African-American Experience

The museum’s 12 inaugural exhibitions focus on broad themes of history, culture and community, music, cultural expressions, and visual arts. To date, the museum has collected more than 36,000 artifacts.
The Reserve Officers’ Training Corps (ROTC) programs at Rensselaer are elective programs for students who desire commissions in the armed forces. The objective is to develop professional officers who have varied educational backgrounds in major fields of interest and have the professional knowledge and standards needed for future growth. Last fall, the midshipmen of Naval ROTC gathered to celebrate the 75th anniversary of the founding of the unit.

The event, held during Reunion & Homecoming weekend, served as an opportunity for both midshipmen and alumni and alumnae to revel in the camaraderie of the unit. Speakers included the Midshipman Commanding Officer, MIDN 1/C Benjamin Lovejoy; the Commanding Officer, Capt. Daniel D. Arensmeyer, USN; and President Shirley Ann Jackson, who discussed the evolution of the unit from the flight preparatory school in the basement of the Greene Building, to the current wardroom and facilities that the unit occupies today.

“The first thing I noticed stepping toward the podium was the amount of history in the room,” said Lovejoy. “With RPI alumni and alumnae who graduated over 70 years ago in the same space, the sea stories and lessons that they shared with us had to be experienced firsthand or they’re simply incomplete. Such experiences cannot be taught in a classroom. The most important aspect that this event provided for all current midshipmen is perspective. It reminds me of a line in the sailor’s creed, ‘I represent the fighting spirit of the Navy and those who have gone before me.’ The 75th anniversary put a face to those who have gone before me, and I believe that is an invaluable experience that you simply can’t get anywhere else.”

Following the remarks, a plaque was dedicated to honor the 75 years of camaraderie and unit pride.

In keeping with NROTC tradition, attendees had an opportunity to witness a special ceremony known as the “cutting of the cake,” which was led by the youngest midshipman present, MIDN 4/C Louis Catalano, and oldest alumnus present, Edward Miller ’46. This act symbolizes the passing of tradition from one generation to the next as well as the timeless commitment and camaraderie instilled in the United States armed forces.

Materials scientists like Shi develop materials with properties that can enable new technologies or better suit current technologies. In essence, there are three major options for changing the properties of a material: change the composition, change the temperature, or change the pressure on the material. Each has advantages and drawbacks, and a material suitable for commercial applications must be economical and exhibit the necessary properties under relatively common conditions.

In this research, Shi focused on the use of pressure to alter the electron-lattice composition, or symmetry, of cadmium sulfide, and change its properties.

By combining the robust thin-film semiconductor with the temperature-sensitive substrate, Shi is able to easily subject the semiconductor to great strain. The results also hint at the potential for producing a voltage from thermal energy, which could lead to harvesting thermal energy.
On Nov. 3, representatives from 25 foreign countries and territories toured business and academic locations in the Capital Region—including Rensselaer—as part of an initiative to attract foreign direct investment (FDI) to New York state. The two-day “Global NY FDI Road Show” made stops at three locations in the Capital Region, with 36 consuls general and other foreign representatives who traveled from New York City for the opportunity.

Lieutenant Governor Kathy Hochul, who addressed the leaders from six continents, said, “New York state has the talent and the resources to attract foreign investment in a number of industries. The more we expose the international community to the wealth of opportunities New York state has to offer, the more foreign direct investment we will attract.”

At Rensselaer, the group spent a half-day in the Center for Biotechnology and Interdisciplinary Studies (CBIS). The day began with welcoming remarks from Richie Hunter, vice president for strategic communications and external relations.

“President Shirley Ann Jackson is leading a transformation of Rensselaer as The New Polytechnic, an emerging paradigm for teaching, learning, and research which recognizes that global challenges and opportunities are so great they cannot be adequately addressed by even the most talented person working alone,” Hunter said. “Rensselaer serves as a crossroads for collaboration—working with partners across disciplines, sectors, and geographic regions—to address complex global challenges, using the most advanced tools and technologies.

As The New Polytechnic, Rensselaer serves as a crossroads for collaboration, working with partners to address complex global challenges, using the most advanced tools and technologies.

Other speakers included Steve Rock, senior research scientist, who spoke about the work being done in the Center for Automation Technologies and Systems; Nick Viggiani, assistant vice president for research, who spoke about Rensselaer applied research and industry partnerships; and CBIS Director Deepak Vashisht, who gave an overview of the research at CBIS and who also led a tour of the facility.

The session concluded with a working lunch led by Jonathan Dordick, vice president for research, who spoke on “Research That Matters.”

“My colleagues and I were very excited to learn more about New York state and to meet with state government officials, representatives from diverse industry groups, and economic development organizations,” said Hon. Jana Trinovcova, consul general of Slovakia and president of the Society of Foreign Consuls, 2015-2016. “We are grateful to Governor Cuomo and the Global NY staff for offering this opportunity, and we look forward to many more in the future.”

The tour was led by Empire State Development, New York’s chief economic development agency.
SHIRLEY ANN JACKSON, president of Rensselaer, has been named a recipient of the University at Albany Foundation’s Citizen Laureate Award. Established in 1977, the Citizen Laureate Awards honor outstanding leaders in business and industry, government, and academia, and are the most prestigious honors bestowed by the foundation.

NIKHIL KORATKAR, the John A. Clark and Edward T. Crossan Professor of Engineering and a nanomaterials expert, has been named a fellow of the American Society of Mechanical Engineers. The organization recognized Koratkar for his “exceptional achievement in the science and technology of one-dimensional (carbon nanotubes) and two-dimensional (graphene) nanomaterials, leading to important breakthroughs in nanotechnology, energy, and sustainability.”

VIVEK GHOSAL, a widely recognized expert in the fields of antitrust and regulatory economics, and various aspects of business strategy, has been named the Virginia and Lloyd W. Rittenhouse ’35 Professor of Humanities and Social Sciences. An endowed professorship is among the highest honors bestowed on a faculty member. Ghosal also serves as the head of the Department of Economics. Ghosal has extensive experience in antitrust and regulatory matters, serving as an economist at the U.S. Antitrust Division in Washington, D.C., and an economics expert with the Organization for Economic Cooperation and Development in Paris. He has published numerous articles in economics, law and management journals, along with two books focused on antitrust and regulatory reform.

STANLEY DUNN, vice provost and dean of graduate education, has been elected to serve a three-year term on the Executive Committee of the Northeastern Association of Graduate Schools. The organization is one of four regional affiliates of the Council of Graduate Schools, which is the only national organization in the U.S. dedicated solely to the advancement of graduate education and research.

LINDA KRAMARCHYK, program manager in information technology and web science, has been named the 2016 Pillar of Rensselaer. The award was presented to Kramarchyk at the 44th annual Service Recognition & Retirement Dinner. The Pillar Award, the highest honor Rensselaer gives to a staff member, is presented annually to a staff member who understands the Institute’s mission and history, has been a role model for other employees, has shown concern for students and their welfare, has added to the human dimension of the school, and who has played an active role in his or her home community.

LINDA MCGOWN, the William Weightman Walker Professor of Chemistry, was selected for the Power List 2016 by The Analytical Scientist magazine. The list celebrates the top 50 most influential women in the analytical sciences.

JENNIFER PAZOUR, assistant professor of industrial and systems engineering, has been named the recipient of a 2016 Gulf Research Program Early-Career Research Fellowship. A program of the National Academies of Sciences, Engineering, and Medicine, the Gulf Research Program was established in 2013 as a result of the Deepwater Horizon oil spill. The program funds activities to enhance oil system safety and the protection of human health and the environment in the Gulf of Mexico and U.S. outer continental shelf regions. Pazour is one of 10 recipients of the early-career research fellowships, which recognize professionals at the critical pre-tenure phase of their careers.

LEE LIGON, associate professor of biological sciences, has been elected chair of the American Society for Cell Biology’s Public Information Committee (PIC) for a three-year term. Ligon has been active with the PIC since 2009 as an associate, a regular member, and most recently ex officio while on leave from Rensselaer as an AAAS Science and Technology Policy Fellow in Washington, D.C., with the U.S. Agency for International Development.

MICHAEL SYMANS, associate professor of civil and environmental engineering, was elected national vice president of Chi Epsilon, the national civil engineering honor society, at its 44th National Conclave. Symans has served as the Northeast District Councilor since 2010 and the National Marshall since 2012. He became a member of Chi Epsilon at the University at Buffalo in 1989 and served as the faculty adviser of the Rensselaer chapter from 2002 to 2010, during which time he received the Chi Epsilon Arthur N.L. Chiu Outstanding Faculty Adviser Award for the Northeast District.

MOHAMMED ZAKI, professor of computer science and an expert in scalable data mining techniques, has been named a fellow of the Institute of Electrical and Electronics Engineers (IEEE). Zaki is being recognized “for contributions to knowledge discovery and data mining.” Fellowship is conferred upon a person with an outstanding record of accomplishment in any of the IEEE fields of interest, is the highest grade of membership, and is recognized by the technical community as a prestigious honor and career achievement.

MARK SMITH, dean of students, passed away in May 2016. Smith came to Rensselaer in 1986 as assistant dean of students and director of academic support programs. In 1995, he was named director of the Office of Minority Student Affairs (OMSA), and in March 2000, he was appointed dean of students, serving until his retirement in February 2016. As dean, Smith was an essential part of the student experience at Rensselaer, promoting and supporting both academic excellence and personal development. His responsibilities included overseeing OMSA, International Services for Students and Scholars, Greek Life, Judicial Affairs, and Disabled Student Services.
The oldest technological research university in the United States is, indeed, **new.**

BY MICHELE OWENS

RENSSELAER/SPRING 2017

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Underscoring the challenges confronting all of humanity, including our access to clean water, food security, energy security, environmental security, health security, and the need to mitigate diseases, President Shirley Ann Jackson told a London audience in January of 2013, “The urgent global concerns that we face in the 21st century, and beyond...will take all that we have, in terms of ingenuity, collaboration, and good judgment.”

This call to action took place at the Royal Academy of Engineering, where President Jackson recently had been elected an international fellow, and where she had been invited to deliver the ERA Foundation Lecture, which was created to allow a U.K. audience to hear from prominent people in engineering in other nations. She continued, “To meet these demands, we must engage an entirely New Polytechnic—a construct that I will explore with you today.”

Offering examples in fields that ranged from biotechnology to web science to leadership across difficult divides, she considered the proper role of a technological research university in the 21st century: Since complex and networked challenges could not be addressed by the “independent actions of those working in isolation,” they demanded the sharing of expertise in many different fields. New tools and technologies with applications across many fields, particularly in the digital realm, also argued for cross-disciplinary education and research. The New Polytechnic therefore had to serve as a great crossroads for brilliant people from everywhere, “a fresh collaborative endeavor merging across a multiplicity of disciplines, sectors, and global regions.”

The vision President Jackson unveiled in London has guided and shaped Rensselaer in the four years since then—drawing remarkable research partnerships, transforming the pedagogy, and adding a greater sense of focus and excitement to the experience of living, learning, and working at Rensselaer Polytechnic Institute. The oldest technological research university in the United States is, indeed, new.

Appropriately enough, President Jackson’s inspirations for The New Polytechnic reach both backward and forward in time.

“I am fascinated by the original definition of the liberal arts,” she explains. The concept dates back to medieval European universities, where liberal meant “free,” in the sense that such an education was intended to develop play of mind, rather than the purely utilitarian skills required for manual labor. The original liberal arts curriculum consisted, first, of the trivium: grammar, logic, and rhetoric; and then of the quadrivium: arithmetic, geometry, music, and astronomy. “It interested me,” President Jackson continues, “that logic, grammar, and rhetoric were considered important attributes for an educated person. Students needed to develop their thinking skills, to understand the structure of language to express their ideas, and to be able to persuade others of them, before they learned subjects with more practical applications, such as science, mathematics, and music.”

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**INSPIRATIONS FOR THE NEW POLYTECHNIC**

1. **THE ORIGINAL DEFINITION OF THE LIBERAL ARTS.**
   
   The concept dates back to medieval European universities, where liberal meant “free”—such an education was intended to develop play of mind, rather than the purely utilitarian skills required for manual labor. “I always have been interested in the linkage between engineering and the liberal arts,” says President Jackson, “and intrigued by figures such as Leonardo da Vinci, who was at once an artist, architect, engineer, and naturalist.”

2. **BENJAMIN FRANKLIN GREENE.**
   
   First director of Rensselaer from 1847–1859. It was he who added “polytechnic”—Greek for “skilled in many arts”—to the name of the Rensselaer Institute. He had concluded that his own raw young democracy lacked a form of education that suited its great potential as an industrial power: one with “that completeness of scholarly culture comprehend[ed] the idea of a liberal education,” but focused on the applied sciences.

3. **“CLOUDS, CROWDS, JAMS, AND BIG DATA.”**
   
   These new phenomena in the digital realm enabled people to come together to take on sprawling challenges. President Jackson observed, “Now it was possible to share such resources across enterprises, making it easier for people to collaborate, even without geographic proximity.”
She contrasts this with the separation we often see in higher education today between the liberal arts and humanities, and the sciences and engineering. “I always have been interested in the linkage between engineering and the liberal arts,” she continues, “and intrigued by figures such as Leonardo da Vinci, who was at once an artist, architect, engineer, and naturalist.”

A second source of inspiration was Benjamin Franklin Greene, who led Rensselaer from 1847 to 1859 as its third senior professor and its first director. It was Professor Greene who added “polytechnic”—which comes from the Greek for “skilled in many arts”—to the name of the Rensselaer Institute. Early in his tenure, he had toured the great polytechnic schools of Europe, and had concluded that his own raw young democracy lacked a form of education that suited its great potential as an industrial power: one with “that completeness of scholarly culture comprehended in the idea of a ‘liberal education,’” but focused on the applied sciences.

Professor Greene recognized, as well, that the United States needed to educate not just technically skilled people, but leaders: people who would “in due time contribute not a little to the development of a sounder popular judgment, in respect to many of the most important questions which naturally interest a free, and active, and enterprising people.”

To create such a polytechnic at Rensselaer, Professor Greene expanded the course of study from a single year to at least three years. He narrowed the professional preparation offered to the fields of civil and topographic engineering, at the same time as he elevated the quality of the education—ensuring that Rensselaer engineers graduated with backgrounds in the sciences, literature, philosophy, and the arts.

The success of his reforms was immense, and the graduates of Rensselaer Polytechnic Institute did indeed become leaders, going on to conceive, to site, to plan, to design, and to build much of the commercial and social infrastructure of the United States, including roads, bridges, canals, ships, aircraft, and, beginning in the 20th century, its communications and information systems.

A third source of inspiration for President Jackson were the challenges and opportunities of our present day, including, she says, “clouds, crowds, jams, and Big Data”—new phenomena in the digital realm that enabled people to come together to take on sprawling challenges. “I observed at the beginning of cloud-sharing platforms that they could perform a function similar to that of the time-sharing of computer resources at the great Bell Labs, where I had started my research career. Only now, it was possible to share such resources across enterprises, making it easier for people to collaborate, even without geographic proximity.”

The advent of crowdsourcing, crowdfunding, and “jams” suggested the power of the ad hoc communities that could
be assembled online. With the dawning of the Internet of Things, and the networking of physical devices of all kinds, ever larger volumes of digital data were beginning to be produced, within which clearly lay some answers to previously unanswerable questions.

“By creating a New Polytechnic animated by such tools,” says President Jackson, “we had the opportunity to rally new and creative ways to answer fundamental questions.”

Of course, The New Polytechnic was preceded by the multidisciplinary platforms built during the last 15 years at Rensselaer, and enabled by them, including the Center for Biotechnology and Interdisciplinary Studies, or CBIS, which expanded Rensselaer’s traditional strengths in engineering and computation to the realm of biology; and the Curtis R. Priem Experimental Media and Performing Arts Center, or EMPAC, which is not only one of the world’s most advanced performing arts centers, but also a laboratory for research in haptics, lighting, acoustics, visualization, human perception, and human-scale interactions with the digital world.

However, The New Polytechnic gave a fresh impetus to research across disciplines, sectors, and borders. It helped to inspire the Rensselaer Institute for Data Exploration and Applications (the Rensselaer IDEA), which brought together Rensselaer web and data science experts with researchers in fields that range from medicine to cybersecurity to the microbiome.

It helped to inspire, as well, the Jefferson Project, a partnership with IBM and The Fund for Lake George, which is using Lake George at the bottom of the Adirondack Park to establish a new, science-based paradigm for fresh water conservation—something urgently needed, given recent crises of water contamination in Flint, Michigan, and Hoosick Falls, New York, as well as protracted droughts in California and around the globe.

This paradigm is based on an enormous amount of streaming observational data supplied by 41 smart sensor platforms deployed around the lake; sophisticated data analytics, data visualization, modeling, and computation; and experimentation that allows hypotheses emerging from the data to be tested and confirmed. The project has brought together biologists, earth and environmental scientists, data scientists, computer scientists, artists, environmental advocates, and engineers of all kinds—as well as students in many different fields.

“As many questions as we are answering, it is just astounding how complex a system Lake George is, in terms of the way water chemistry, run-off, biomass, circulation, and weather affect it,” says John Kelly III ’78, senior vice president of solutions portfolio and research at IBM, and a member of the Rensselaer Board of Trustees. “So the Jefferson Project is a poster child for The New Polytechnic—no single discipline could possibly understand it.”
Kelly and his wife, Helen-Jo Kelly are, in fact, so enthusiastic about the Jefferson Project that they have supported it personally, endowing the new Helen-Jo and John E. Kelly III ’78 Data Visualization Laboratory, whose advanced computation and graphics systems are allowing researchers to integrate the 9 terabytes of data annually that the Jefferson Project’s sensor platforms will yield when they are complete.

“The data we are generating could be millions of pages of numbers. But one of the benefits of visualization technologies is that they help us to represent the lake in four dimensions, including over time, which allows us to ask better questions—as we see things we can’t yet explain,” says Kelly.

The New Polytechnic seeks to bring together not just people, but also different means of learning and understanding. Another research partnership with IBM, the Cognitive and Immersive Systems Laboratory, or CISL@EMPAC, intends to forward such multimodal learning by combining cognitive computing with sensor- and actuator-rich immersive and interactive systems.

CISL researchers are focusing initially on creating smart situations rooms, occupant-aware immersive environments animated by intelligent systems that can facilitate group interactions of all kinds, from board meetings, to joint design sessions, to college classes. “This is groundbreaking work, not being done anywhere else in the world,” Kelly says. He points out that at IBM, where Rensselaer alumni were key to the invention of the pioneering Watson cognitive computing system, they think a great deal about the ways that human interactions with cognitive systems can improve decision-making in fields such as health care. “But at CISL,” he emphasizes, “we are enabling such interactions not at a small scale—but within a human environment at the scale of a room, with a group of participants. This is how decisions are going to be made in the future, whether in a legal conference room or in a hospital room.”

CISL is not just an expression of The New Polytechnic—ultimately, it will enable The New Polytechnic by generating tools for fluid collaborations of all kinds.

When asked about university-based collaborations, Provost Prabhat Hajela points out how appropriate it was that a new vision for the role of the technological research university was introduced at the Royal Academy of Engineering. “We have come full circle. Such national academies and societies were how scientific knowledge was organized in the 17th century. These ‘invisible colleges’ were how pre-eminent intellectuals communicated about their work.”

The term “invisible college” was a name adopted by the natural philosophers surrounding Robert Boyle—one of the
founders of modern chemistry—as they came together to exchange ideas. The patronage of King Charles II in the early 1660s turned this invisible college into the Royal Society of London for Improving Natural Knowledge. At that time, universities were preoccupied with classical studies and theological questions—impacting the knowledge of the past, but not serving vigorously to advance it. The Royal Society served as a crossroads for global scientific progress, publishing such groundbreaking work as Sir Isaac Newton’s *Principia Mathematica* and the pioneering observations Antony van Leeuwenhoek made through his microscopes.

Even as universities rose to the fore as the place where scientific progress is made, sociologists and historians still use the concept of “invisible colleges” to refer to the informal networks that arise among scientists at different institutions working in the same or related fields. Now, new technologies have radically accelerated the formation of such colleges, and empowered them. “In a digitally connected world, we are seeing a re-emergence of an old pattern,” says Hajela. “‘Big Science’ is now self-organizing and non-hierarchical. Funding and control do not rest with one group or a single university. Today, one network forms, tomorrow another network.”

Increasingly, these networks are international. In 2000, only one in five U.S. academic publications in science and engineering included co-authors at international institutions; that has risen now to one in three. A recent study involving Rensselaer researchers published in *Nature Nanotechnology* offers a prime example. The study successfully deployed a novel strategy to defeat the influenza A virus, using a decoy nanoparticle that traps the virus. Seok-Joon Kwon of CBIS coordinated the collaboration among Rensselaer researchers, who designed and characterized the drug, and researchers at several South Korean institutions, who tested the drug on immune-compromised mice, 75 percent of which survived an infection that otherwise would have been 100 percent fatal. Given fears about future flu pandemics, such a result is promising.

When asked about the cross-institutional, cross-national nature of the study by *The Daily Gazette*, co-author Robert J. Linhardt, the Ann and John H. Broadbent Jr. ’59 Senior Constellation Professor of Biocatalysis and Metabolic Engineering, said, “Science is not driven by one person. You need people with high skill sets in a lot of different areas.”

Hajela agrees: “The gamut of knowledge does not reside with one person, so at Rensselaer, we bring people together,” he says.

The New Polytechnic is intended, of course, not merely to advance groundbreaking research, but also to redefine a modern technological education for Rensselaer students. Hajela points out that the “invisible colleges” and wide-ranging connections forged by Rensselaer faculty generate opportunities for Rensselaer students to cross borders as well, whether those borders are disciplinary, sectoral, or national.

Such opportunities are being formalized by the Summer Arch, a restructuring of the academic calendar that will be piloted this summer. Under the Summer Arch, all Rensselaer students will soon spend the summers after their sophomore year on campus in
junior-level classes. This will allow them to spend one semester away during the traditional junior year, and still graduate in the usual span of time—while expanding their horizons, by engaging them in the adventure of a semester-long internship, co-op, research, entrepreneurial, or volunteer opportunity. International experiences that immerse them in other languages and cultures will be highly encouraged.

“At Rensselaer, we embrace our history as a polytechnic first— and offer our students deep knowledge in their chosen fields, since you have got to know something to do something! But we also embody the true liberal arts, equipping our students with perspectives that allow them to put their thinking skills to work in a collaborative way,” says President Jackson.

To help students develop the intellectual agility, multicultural sophistication, and global view required for a future of borderless collaborations, aspects of the trivium of logic, grammar, and rhetoric have been incorporated into the curriculum in daring ways. These include the Mandarin Project, a class in Chinese language and culture that uses a semester-long game narrative, mixed reality in settings such as a Chinese tea house, and soon, interaction with artificially intelligent characters, to allow students to test and extend their ability to understand and communicate spontaneously.

One of the key goals of The New Polytechnic is to lead in such pedagogical innovations. Toward that end, Rensselaer has created the Teaching and Learning Collaboratory, which includes the Beta Classroom at Folsom Library—a room for exploration by all faculty, equipped with up-to-the-minute technologies that can readily be incorporated into classrooms, such as games and small-scale immersive environments—as well as a Collaboratory Faculty Board, whose members investigate possible advances in teaching that arise from Rensselaer research, and then share such advances with the faculty as a whole.

Trustee Jeffrey Kodolsky ’70, who recently toured the Beta Classroom, says, “Everyone knows that we should be integrating new technologies into learning—but nobody has really figured it out. I am so impressed and proud to see my alma mater actually doing it.”

Kodolsky himself pioneered the kind of tools that inspired The New Polytechnic vision. He is the co-founder of National Instruments and the inventor in 1986 of LabVIEW, groundbreaking systems design software that uses a graphical programming language to make it easy for engineers and scientists to create measurement and control systems. LabVIEW allows brilliant people to think with their eyes as well as their minds, and creates the linkage between cyber and physical systems that today is recognized as one of the key characteristics of what has been called “the Fourth Industrial Revolution.”

Kodolsky points out that scale questions alone argue for one of the key tenets of The New Polytechnic—encouraging students to make intellectual connections across the disciplines. “Advances in microelectronics, materials science, and combinatorial chemistry all are pushing down into the realm of nanometers. Biology, computation, physics—they are all converging in this realm. So, if you don’t have a multidisciplinary view, you are missing out.”

Even the arts are part of this atomic-scale convergence. The discovery of quasicrystals, for which Dan Shechtman was awarded the Nobel Prize in Chemistry in 2011, is as an example. Though it was long believed that crystals had to have a pattern that repeated in three dimensions, Shechtman discovered crystals whose atoms were arranged in a non-repeating fivefold symmetry. Interestingly enough, such arrangements had already been explored in both mathematics and in art. There are, for example, medieval Islamic mosaics that use a small number of different tiles over and over to create similar aperiodic, or non-repeating, patterns.

“There is art in and of science, and science in and of art. We want our students to be able to see this, as a spur to their own creativity,” says President Jackson.

Toward that end, Rensselaer has embraced an initiative called Art_X@Rensselaer, which explores the connections between the arts and science and technology, both in the classroom and in campus life. The School of Humanities, Arts, and Social Sciences (HASS) will serve as “a corridor for creativity.”

Art_X is helping students take advantage of an outstanding faculty at HASS through team-taught classes and new programs, such as a technologically focused Bachelor of Science degree program in music currently being developed. Art_X is helping to draw more students to the magnificent EMPAC platform, which attracts innovative artists from around the world, with a new program called EMPAC+ that offers students free tickets to all EMPAC-curated events.

Art_X is not just part of HASS, however. For example, with the advent of Art_X, the design classes in the School of Engineering, required of all aspiring engineers, now examine beauty and grace as key concepts, along with function, budget, safety, and performance.

The New Polytechnic intends to give students more than just a familiarity with the vocabularies of different disciplines. The goal is to give them the confidence actually to contribute in areas outside of their range of expertise, because such contributions are likely to be original, and may offer new avenues out of conventional wisdom.

As President Jackson sees it, the flowering of creativity encouraged by the connection of people, technologies, and ideas may yield more than great professional achievement. It may yield great fulfillment as well. “To discover, invent, design, make, and propagate—that is who we are as humans, what life is about.”

By encouraging the intellectual freedom that allows for such creativity, and by focusing that creativity on the greatest of global challenges and opportunities, The New Polytechnic may well change the world.
JOHNSON SAMUEL calls himself a “manufacturing guy.”
But he’s not focused on how to replicate products hundreds of thousands of times. Samuel’s groundbreaking work, instead, is based on the most basic, front-end research that intersects with materials, new manufacturing techniques, and data analytics.

“There are different stages that make up the manufacturing pipeline. A lot of what I do sits at the genesis of that pipeline,” says Samuel, assistant professor of mechanical, aerospace, and nuclear engineering. He also is director of the NanoM3 Design Lab at Rensselaer.

Consider the research he is doing to develop new surgical tools and techniques for drilling into bone. An important part of this research is studying the microstructural elements of certain bones, taking into account the age of individual patients. This approach could help inform a new generation of bone machining tools to reduce patient recovery times.

“Johnson Samuel is one of about 90 faculty members who are conducting transformative research in Rensselaer’s Center for Materials, Devices, and Integrated Systems (cMDIS),” says center director Robert Hull. “We take a multidisciplinary, multi-perspective approach to broaden our net on the types of complex problems and issues we can address.”
Johnson Samuel (right) talks with graduate student James Nowak ’16, an NSF graduate fellowship award winner, in the Manufacturing Innovation Learning Lab.
Building on the strong culture of interdisciplinary research and academics at Rensselaer, cMDIS aims to advance next-generation electronic and optical devices, manufacturing and robotics, integrated biomaterial devices, energy harvesting and storage, electric transmission/distribution, responsive and adaptive built environments, and nanostructured composite materials, among other leading-edge technologies.

Hull, who came on board as the first director of cMDIS in 2014, is known for his research in academia and the private sector in the fundamental growth mechanisms of semiconductor films and the self-assembly of nanostructures, and for his work in exploring potential applications of these films and structures for future nanoelectronic devices.

“An important mission of the center is to advance research that spans the range from fundamental discovery to systems-level assembly and manufacturing,” he says.

**ADDITIVE MANUFACTURING**

These days, Samuel has turned his attention to additive manufacturing, otherwise known as 3-D printing. It’s a technique that industry is increasingly relying on for rapid product development. Unlike the traditional subtractive manufacturing process that starts with a bulk material and removes the excess as needed, additive manufacturing leverages computerized 3-D design data, along with layer-by-layer material deposition, to build the final part.

Additive manufacturing primarily has been used for polymers. Increasingly, though, industry is turning to metal to design such things as jet engine fuel nozzles. Among the challenges, however, are the defects such as microscopic cracks that result from uneven heating and cooling between layers.

“Additive manufacturing provides a high degree of design freedom,” Samuel says. “But the properties of the final product are not as strong. All this has to do with how the metal reacts to the laser that is melting it.”

To address the shortcomings in 3-D metal printing to reap its revolutionary promise, the federal Defense Advanced Research Projects Agency (DARPA) established the Open Manufacturing Program. The program funds research efforts aimed at understanding the physics of the 3-D metal printing process.

One goal of the program is to centralize the data collected from DARPA’s funded projects to develop a data repository that could be used to lay out universal standards.
for additive manufacturing and allow researchers to explore each other’s research.

In collaboration with the Rensselaer Institute for Data Exploration and Applications (IDEA), Samuel’s team has begun to work on this data repository with the ultimate goal of converting massive archives of metal 3-D printing data into a “digital handbook” for the scientific community.

So far, Samuel’s team has established a user portal, which has been tested on DARPA servers. The team has also developed visualization mechanisms and mathematical models to help researchers better understand the data.

**COLLABORATIVE ENVIRONMENT**

Established in 2014, cMDIS builds off its predecessor, the Center for Integrated Electronics (CIE). The mission of the cMDIS is to provide a unified voice among Rensselaer’s physical, chemical, and engineering sciences as well as to support excellence in existing research strength areas and promote new areas of intellectual discourse and research.

The cMDIS houses two prominent facilities. The Micro and Nanofabrication Clean Room is a state-of-the-art facility that supports research and education in microelectronics, energy, lighting, biotechnology, nanotechnology, materials science, and microelectromechanical systems.

The 10,000-square-foot facility enables faculty from diverse disciplines in science and engineering to establish collaborative, large-scale programs that would not otherwise be feasible. Researchers can fabricate structures as small as 10 nanometers (nm), and they can visualize structures as small as 1.5 nm. The facility accommodates a wide range of substrate sizes of silicon, compound semiconductors, and emerging material systems for high-speed electronics, power devices, optoelectronic devices, integrated circuits, and microsystems.

“This clean room is an institute-wide core facility, meaning that we support our research and education mission across campus in many different areas, and we work to facilitate interactions between those areas,” says Morris Washington, cMDIS associate director and professor of practice in physics in the Department of Physics, Applied Physics, and Astronomy.

The second major center is the Nanoscale Characterization Core, which contains more than a dozen instruments to interrogate the structure and properties of materials at the atomic level and to understand their function at the most basic level.

The cMDIS unites numerous centers and facilities across campus, including the Rensselaer Nanotechnology Center, which has been integrated as part of cMDIS. Affiliated centers are the Center for Future Energy Systems, the Center for Architecture Science and Ecology, the Center for Lighting Enabled Systems and Applications, the Scientific Computation Research Center, and the Center for Automation Technologies and Systems.

cMDIS also collaborates broadly with other centers and facilities to form a highly integrated and diverse research environment as part of the institute-wide research initiatives at Rensselaer. These collaborative partners are the Center for Biotechnology and Interdisciplinary Studies, the Center for Computational Innovations, IDEA, and the Cognitive and Immersive Systems Laboratory.
“Our exceptional researchers, our center affiliates, and our corporate and government partnerships reaffirm our intention for maintaining a worldwide reputation in advancing the interdisciplinary domain, which encompasses the broad swath of engineering, physical, and chemical sciences research at Rensselaer,” Hull says.

INTEGRATED SYSTEMS
John “Jack” McDonald came to Rensselaer in 1974, a few years after Intel launched the first microprocessor in 1971. Ted Hoff ’58, recognized as the father of this so-called computer on a chip, was one reason McDonald was interested in teaching and conducting research at Rensselaer.

McDonald, professor of electrical, computer, and systems engineering, has spent the last 35 years developing new ways to integrate electronic devices into ever more powerful circuits. His research has focused on reducing the size of the circuit, first on integrated circuit boards and then on integrated circuit chips.

The transition from integrated circuits on boards to single chip implementation in the 1970s provided the impetus in 1980 to establish the CIE, of which McDonald was a founding member.

McDonald’s role at the CIE, which housed the first clean room on campus, was to lead research in chip design using electron beam lithography. This tool emits point-focused beams of electrons to define the shapes of devices used to build integrated circuits.

In the early 1980s, Rensselaer acquired an IBM EL2 ebeam that could define lines as narrow as 500 nanometers, which was considered state of the art at the time. McDonald and his research team were able to reduce the lines to 200 nanometers. In the 1990s, McDonald was part of a Rensselaer research team funded by DARPA to design a microprocessor capable of one billion instructions per second using gallium arsenide technology.

“Integrated circuit chips started a trend of mammoth proportions in which we can now put about 24 computers on a single chip,” says McDonald, who holds 10 patents. “There is just so much incredible change in the industry.”

Consider that today’s laptops and smartphone processors are capable of tens of billions of instructions per second and ebeams can make electronic components on chips with feature sizes as small as four nanometers.

McDonald has since turned his attention to wireless circuits and broadband data transfer, among other research areas.

His latest research includes the development of Josephson junction device circuits. Two superconductors separated by a thin insulator form a Josephson junction.
The junction itself can switch between superconducting and normal conduction, which permits its use in digital logic.

Superconductivity is a phenomenon in which metals have no resistance to the flow of energy at very cold temperatures (4.2 Kelvin for the superconductor material niobium). No resistance means no energy is lost as electrons flow through the materials, allowing high-speed pulse signals.

“This tiny junction uses about 10,000 times less energy than a standard CMOS signaling scheme, and it’s running on superconducting wires,” says McDonald. CMOS, which stands for complementary metal-oxide-semiconductor, is the lowest power technology in production.

McDonald’s Josephson junction circuits could be incorporated into giant servers and supercomputers stored in cryogenic containers called cryostats. The energy saved through the technology could more than offset the cost of the chilled cryostats, while increasing computer processing speed exponentially.

McDonald is also exploring silicon-germanium-based heterojunction bipolar transistor (SiGe HBT) technology for high-speed computation. The initial challenge in the earliest stages of this emerging technology was that it required too much power to impact digital systems in an efficient and affordable way. Now, however, through computer simulations, McDonald has been able to demonstrate a 33-nanometer horizontal or lateral SiGe transistor speed of 2.5 terahertz at 100 times lower power.

“The advantage of the SiGe HBT is that it provides extreme speed,” McDonald says, “but does not need cryogenic temperatures, so the technology has the potential to be used beyond large server and supercomputer applications.”

**MATERIAL IMPACT**

Bruce Watson is a geochemist who applies the principles of chemistry to advance the understanding of how the Earth’s rocks and minerals deep underground have evolved over millions of years. He doesn’t exactly fit the mold of researchers who work at the intersection of materials, devices, and integrated systems. But in many ways, his research could be described as materials science of the Earth.

“I work on Earth’s materials in a very direct way, so I have to know quite a bit about materials science,” says Watson, Institute Professor of Science in the Department of Earth and Environmental Sciences.

Watson conducts laboratory experiments at high temperatures and pressures to mimic the environment within the Earth’s deep crust and upper mantle to depths of more than 90 miles. His work allows him to have a unique perspective on the performance of materials and chemical changes that occur over very long time periods.

Part of his research is about understanding why certain natural crystalline compounds survive over vast time periods in hostile environments. Such understanding can guide the design of synthetic materials of extraordinary durability for special applications such as long-term hazardous waste containment. The U.S. Department of Energy has stipulated that high-level radioactive waste from nuclear power plants and military sources must be isolated from the biosphere for up to a million years.

“Now that’s a realm with which most scientists are uncomfortable. How do you predict the performance for a million years when the oldest human institution might be a couple of thousand years old? But that kind of thinking becomes critically important for some applications,” Watson says.

Watson shares a commonality with a number of cMDIS researchers, including Liping Huang, associate professor of materials science and engineering.

Huang’s research team is collaborating with Corning to make glass stronger and more flexible for cell phones, televisions, and solar panels, among other applications. Her research aims to understand why glass is brittle in the first place and why one glass is stronger than another with seemingly minute compositional differences.

“Theoretically, glass can be made stronger than steel. However, in reality, the practical strength of glass that we use today is typically less than 0.5 percent of the theoretical strength,” Huang says. “This is in part because the surface of glass is susceptible to cracks, scratches, etc. So, one of our major research efforts is to understand and control the glass structure and its response to contact damage.”

“How do you predict the performance (of high-level radioactive waste containment) for a million years when the oldest human institution might be a couple of thousand years old?” BRUCE WATSON
“So many of the things that Liping does are extremely relevant to the work that we do as geochemists at Rensselaer,” says Watson, whose history of glass research spans back to his Ph.D. work. In his early days as a Rensselaer faculty member, Watson and another Rensselaer professor, Minoru Tomozawa, patented a type of glass that is resistant to discoloration by radiation.

For Watson, glass serves as a window into the properties of molten silicate, which can form natural glasses under some conditions. When a volcano erupts, the lava flows over land or on the seafloor and cools to become rock. But if it cools quickly enough, the lava does not crystallize and instead becomes glass. Such natural glass in the environment provides clues about past impact events, such as asteroid collisions into the Earth, over millions or even billions of years ago.

In one recent study, Huang and Watson collaborated to determine the structure and property changes in silica glass compressed under different pressures at high temperature. “The objective was to explore pressure as a way to make novel glasses with unique structures and properties that cannot be obtained through conventional methods,” Huang says.

To build a pipeline of qualified researchers for the U.S. glass industry, Corning launched the Gordon S. Fulcher Sabbatical Program to promote collaboration between industry and academia. Huang was one of two inaugural researchers to participate in the six-month-long research stint at Corning’s Sullivan Park Research and Development facility in Erwin, N.Y., in 2015.

cMDIS has also worked with Corning to pioneer a new program for undergraduate students. Four students at Rensselaer were chosen to participate in 2016. The program provides additional funding for research supplies and to attend national conferences. Each student is paired up with an industrial mentor and at least one visit is to be scheduled to the company’s principal research facility in Corning, N.Y.

FROM BIOMATERIALS TO MOLECULAR DEVICES
Kim Michelle Lewis, associate professor of physics, applied physics, and astronomy, is using biological materials to build nanostructures for molecular electronics. Her research team designs electronic device components, such as electronic switches, rectifiers, and transistors, that use single or a few molecules to store information or access electronic states.

Lewis is studying the electrical responses of porphyrins, a class of biological pigments that make plants green. They are also present in the blood of people and animals. Their complex ring structures, which contain different metallic atoms, can be used to capture and store light, making them attractive for studying photovoltaic and other electronic applications.

“They can be designed to transport charge over long distances and can function as light-harvesting materials, which are some of the main reasons we’re interested in them,” says Lewis.

Lewis identifies signatures from molecules that mimic solid-state devices such as diodes, which control the flow of current or electric charge in only one direction. Among other things, diodes protect electronics from voltage surges and are used for lighting (light-emitting diodes, or LEDs).

“The goal is to find ways that these devices can compete with conventional solid-state devices,” Lewis says.

One main advantage to building molecular electronics is that they use a fraction of power compared to their conventional counterparts. Although it might be a long way before we see molecular diodes and batteries in our computers and cell phones, Lewis says the technology looks promising in the progress already made.

In one project with computational physicist Vincent Meunier, head of the Department of Physics, Applied Physics, and Astronomy, Lewis observed bistability in a porphyrin molecular junction, which can be used to design molecular switches. The device was fabricated
by depositing a layer of porphyrin molecules onto a gold metallic nanogap.

Lewis uses atomic force and scanning tunneling microscopes to study the electronic properties of the porphyrin material. Her research team also uses a cryostat that cools samples down from 300 Kelvin, which is close to room temperature, to a low temperature of 4 Kelvin, more than 450 degrees below 0 degrees Fahrenheit.

The research also requires high-performance computing and a theoretical analysis to model the molecular devices and work through complex calculations. This is where Meunier’s expertise comes in. He uses computation to examine the most minute details of materials. He teams up with engineers and experimentalists like Lewis to optimize these materials, starting at the atomic level and targeting functionality.

“The experiments that Kim Lewis conducts are challenging. At times, she is using extremely low temperatures to conduct her research and there are a lot of external parameters to consider. That is my role as a computational physicist to account for all of these effects,” Meunier says. “It’s not just running a piece of software—it’s understanding the outcomes, and this is why collaboration is so important.”

Meunier draws on his theoretical expertise and the high-performance computing resources at the Center for Computational Innovations. “Today, we can use fundamental properties of materials and learn how electrons behave in materials. We can now link fundamental principles to actual materials for applications.

“We are finding that the theory matches the experimental in more seamless ways. This is because of today’s computational capabilities, and that’s what really drives my research,” Meunier says.
More than a performing arts center, EMPAC is a busy project incubator for artworks traveling far beyond the Rensselaer campus; through the commissioning of new projects that go on to travel the international festival circuit, the center has become a major force in the world of experimental media.  

BY JOSH POTTER
WHEN LAURIE ANDERSON first screened her film *Heart of a Dog* at the Curtis R. Priem Experimental Media and Performing Arts Center (EMPAC) in December 2014, it didn’t yet have a soundtrack—or even a title. Billed as *New Film (a personal essay)*, the screening offered the Rensselaer community the first glimpse of a work-in-progress that would go on to premiere at the Telluride Film Festival in September 2015 and garner a host of international awards, including nominations for Best Documentary at the Chicago International Film Festival, Adelaide Film Festival, Venice Film Festival, International Cinephile Society Awards, Village Voice Film Poll, and a shortlist mention at the Academy Awards.

The EMPAC screening marked the culmination of Anderson’s tenure as Distinguished Artist in Residence between 2012 and 2014, during which time she worked at EMPAC on a number of projects in various states of gestation. In addition to *Heart of a Dog*, which was first commissioned as a 40-minute segment for French-German Arte TV, Anderson used her residency to develop *The Gray Rabbit*, a film installation that showed in Rio de Janeiro and Sao Paulo, and *Landfall*, a musical composition that the...
Kronos Quartet toured internationally during 2014-15. For *Heart of a Dog*, Anderson worked with the EMPAC video team in Studio 1 to film a partially animated sequence recalling an encounter between a goose and her rat terrier Lolabelle, the film’s canine protagonist. Watch closely and you can see the distinctive interior of EMPAC’s black-box theater in the sequence. Stay for the credits and you’ll see the thank you Anderson dedicates to Rensselaer for help on the project.

Such is the nature of many projects commissioned by EMPAC, developed in the artist residency program either in part or in full, and then birthed into the film, music, and performing arts world. To fully understand the EMPAC program and its distinguished status in the international media art milieu, you have to look beyond the center’s seasonal calendar of events—which often features work-in-progress presentations and artist talks built around

"NO OTHER UNIVERSITY HAS CREATED THIS KIND OF IMPACT THROUGH SUCH AN INCREDIBLY WIDE SCOPE OF WORK, RANGING FROM DIVERSE MUSICAL STYLES TO EXPERIMENTAL FILM PRODUCTIONS, FROM THEATER AND DANCE TO TIME-BASED VISUAL ARTS.”

JOHANNES GOEBEL

Lucy Raven’s *Tales of Love and Fear*, which explores 3-D imagery, showed at Manhattan’s Park Avenue Armory.
developing projects, alongside a roster of one-off shows—and into the flight pattern of projects that continue to evolve, and gain exposure and acclaim, when they leave the production environment at EMPAC and tour on the international festival and performance circuit.

AT FIRST GLANCE, EMPAC is a performing arts center—it’s in the name after all—but it might be better to think of the center’s artistic program first as a project incubator or media-arts laboratory. From its inception, the EMPAC program has focused on commissioning new projects at the intersection of art, science, and technology, developing many of those projects within an artist residency program. EMPAC’s staff of curators—one each for music, theater and dance, and time-based visual arts—invite international experts in their fields to create work that would be impossible elsewhere. In most cases, the project begins with a content-based idea on the part of the artist, which the EMPAC team works to realize within the center’s unique infrastructure. In some cases, these tools and technologies spur the initial project idea.

Often, the commissioned work is completed and presented at EMPAC, while in the case of co-commissioned productions—collaborative ventures with other institutions—the project may be created in part at EMPAC but presented elsewhere. And depending on the media with which the artist is working, the end result of this commission can take many shapes: a performance that travels in the performer’s repertoire, a film that screens according to licensing and distribution arrangements, a recording released by a record label, or any number of other possibilities. There’s no set formula for how a commission must take shape, which creates an organic working environment to yield truly creative ideas.

“EMPAC’s commissioning of new works is the envy of many universities’ arts departments and performing arts centers,” says EMPAC director Johannes Goebel. “No other university has created this kind of impact through such an incredibly wide scope of work, ranging from diverse musical styles to experimental film productions, from theater and dance to time-based visual arts.”

EMPAC’s very first project, There Is Still Time..Brother, began as a proposal by Goebel to the New York City-based experimental theater company the Wooster Group to develop a new interactive film for the yet-to-be-constructed 360-degree panoramic screen, which was to become one of EMPAC’s prominent features. In this case, a technological set-up and a dramaturgical concept was used to initiate a new work.

Over four years (starting in 2003, before EMPAC opened), the project evolved through a high level of collaboration between EMPAC, the Wooster Group, the iCinema Centre for Interactive Cinema Research at the Australian University of New South Wales, and the ZKM | Institute for Visual Media in Germany, before its hometown presentation at EMPAC’s Opening Festival in September 2008. The final product was an interactive film where the audience sits within the circular screen and one member controls the visual and sonic focus (that is, the narrative) depending on what part of the screen they face.

For the campus and local audience, that seems like the end of the story. In fact, it’s just the beginning. Upon completion, There Is Still Time.. Brother went on to tour the world, first to Germany at ZKM for the PanoramaFestival, then to the Portland Institute for Contemporary Art in Oregon for the Time-Based Art Festival, then to the Run Run Shaw Creative Media Centre in Hong Kong for the Grand Opening Festival, then to Sao Paulo, Brazil, for SESC Pompeia, and, most recently, to Shanghai, China, at the Chronus Art Center. In its travels, the project has been central to both artistic and technical conversations regarding immersive media technologies.

On campus, the development of content for the 360-degree screen was a driving force behind initialization of the Rensselaer Collaborative-Research Augmented Immersive Virtual Environment (CRAIVE) Lab, and showed early promise for the types of projects currently being undertaken by the Cognitive and Immersive Systems Laboratory, a joint research project between Rensselaer and IBM.

Every year, as new residential projects begin to germinate in EMPAC’s production spaces, more completed commissions cycle through the international art scene, spreading Rensselaer’s growing reputation as a hotbed for experimental media, and attracting further interest from those artists who understand that EMPAC is one of the few international venues that will not only consider but also help develop and execute their more ambitious ideas.

“Even before the EMPAC building opened, the commissioning of the Dance Movies series from artists in North and South America made a major imprint in the genre of ‘dance for the camera’ and announced EMPAC as a major new force in experimental media and performing arts,” Goebel says.

Last fall, artist Lucy Raven’s Tales of Love and Fear, which was covered in Artforum upon its premiere at EMPAC in 2015, showed at Manhattan’s Park Avenue Armory, a major forum for large-scale time-based artworks. Part film, part kinetic sculpture, Tales of Love and Fear is a cinema built for a single stereoscopic image, which is split by two projectors—on a rig custom-built by EMPAC engineers—and slowly reconfigured into its full 3-D form over the course of the piece’s duration. Since the piece uses the architectural space of the performance as its projection surface, every new venue will affect the viewing experience differently and guide the project’s evolution over time. A book documenting the project is currently in the works, produced in-house at EMPAC by curator Victoria Brooks and graphic designer Eileen Baumgartner.

Publications—books, recordings, films—are another outgrowth of this commissioning process. Since EMPAC deals exclusively in “time-based” artworks, that is, projects that must be experienced as an event or in the space of performance (as opposed to a static gallery exhibition), the creation of publications is an important way of documenting commissioned projects and circulating these ideas beyond the touring cycle of the performances.
The Color Out of Space is the title of one such book published this fall in collaboration with MIT’s List Visual Arts Center. The book documents an EMPAC-commissioned project undertaken by Italian artist Rosa Barba in 2014-15. Working with Rensselaer’s Hirsch Observatory, Heidi Newberg (professor of physics, applied physics, and astronomy), and undergraduate students, Barba used images of celestial bodies taken through the observatory telescope to create a meditative science-fiction film, projected in March 2015 on the west façade of the EMPAC building. Later that year, Tristan Perich, Nate Wooley, Longleash, and many more, spanning the genres of contemporary classical, jazz, and electronic music.

A unique approach was taken in fall 2015 by popular electronic musician Oneohtrix Point Never (aka Daniel Lopatin). In advance of the release of his album Garden of Delete on the British record label Warp, Lopatin undertook a week of residency in EMPAC Studio 1 to craft the stage show (including lighting design and projections) for his upcoming world tour. Studio 1 served as a model club atmosphere to test strobe effects, color washes, and integrated video. His subsequent performance in front of a Rensselaer crowd served as both a test run for the tour and unofficial premiere of one of the year’s most internationally celebrated musical acts.

Electronic composer Tim Hecker took a similar approach that season, working with the lighting designer MFO. The duo used their EMPAC residency and performance to experiment with extreme haze effects in Studio 1, which all but obscured the performer while enveloping the audience in a seemingly infinite cloud that crackled and glowed when struck with LED lights. The effect is now a standard part of Hecker’s touring show. In many cases, it isn’t until a commissioned work finds its audience in a festival environment that the wider conversation begins. German artist Thom Kubli’s project Black Hole Horizon began in 2012 with a series of questions: “What kind of relationship exists between oscillating air, black holes, and soap bubbles? What effect does the sound of horns have on the human psyche and why is it present in different creation myths? What impact does gravity have on our

ARGUABLY THE MOST EXCITING PART OF AN EMPAC-COMMISSIONED PROJECT IS WHAT HAPPENS HERE ON CAMPUS.

For German artist Thom Kubli’s project Black Hole Horizon, he and the EMPAC team built a series of horns that transform sound into three-dimensional objects by producing giant soap bubbles from the compressed air.
collective consciousness? Where do spectacle and contemplation meet?"

To address these questions, Kubli and the EMPAC team, including then-School of Architecture student and acoustics expert Zackery Belanger '12, built a series of horns that transform sound into three-dimensional objects by producing giant soap bubbles from the compressed air. Last fall, the project was a featured exhibition at the Ars Electronica Festival in Linz, Austria.

Similarly, Lars Jan's 2014 EMPAC commission, Holoscenes, has entered into an international conversation surrounding the effects of global warming as the project tours international festivals such as Art Basel Miami and London's Burning. A co-commission with the Yerba Buena Center for the Arts, San Francisco, and the John and Mable Ringling Museum of Art, Sarasota, the project was developed at EMPAC and the Center for the Art of Performance at UCLA. As The Guardian reported, in the wake of the project's arrival at London's city-wide art festival, Jan initialized the idea with a simple image: "A man is turning the pages of a newspaper and slowly the room fills with water."

At EMPAC, Jan and the production team were able to make this image a performance. The centerpiece of Holoscenes is a large aquarium, which fills and drains as performers struggle to complete a variety of everyday behaviors. The act of shaving, making tea, washing dishes, writing, running, and flying a kite becomes radically altered as hundreds of gallons of water rush into the cubic glass tank, which weighs a staggering 30,000 pounds when full. A major outdoor attraction at art festivals, Holoscenes is equally impressive as a feat of engineering as it is a striking visual spectacle.

The extensive plumbing and electrical work required of the project fell in large part to EMPAC's lead stage technician, Eric Lin, who continues to travel with the project as it is shown all over the world. This is an uncommon arrangement for an EMPAC commission, as most projects leave EMPAC's hands when they leave the building. But in this case, the project would not be replicable without the specialized knowledge born of the project's development phase. Before installing the piece at London's Burning last fall, Lin toured with the project to Toronto, Sarasota, Miami, and Abu Dhabi.

"The further one moves away from our campus, the more amazement and acknowledgement is expressed by what the 'oldest technological university in the U.S.' has created with EMPAC at the intersection of art and technology," Goebel says.

AS REWARDING AS IT IS to see an EMPAC-commissioned project ripple across the globe, arguably the most exciting part of the process is what happens here on campus. In January, dance-film pioneer Charles Atlas, who rose to fame as videographer for the acclaimed Merce Cunningham Dance Company, premiered Tesseract, an EMPAC-commissioned project that has been in development for the past three years. The completed work is the first-ever synthesis of live dance performance with 3-D projections.

While Atlas and his choreographic collaborators Rashaun Mitchell and Silas Riener worked on the six-part project, filming the 3-D segments in EMPAC's Theater and Studio 1, using green-screen technologies and outrageous stage designs, the Rensselaer community had intimate access to the work-in-progress through a series of talks, screenings, and class visits to the film shoot.

In April 2015, Atlas introduced some initial ideas for the project and contextualized it within a larger discussion of his work. In March 2016, a segment of the developing project—What Does Unstable Time Even Mean?—was screened as part of EMPAC's On Screen/Sound film series. Then last fall, Atlas offered another look at his methods by screening a number of films that have been influential to the project, including the sci-fi horror movie Cube2: Hypercube.

A co-commission with the Walker Art Center in Minneapolis, Tesseract is already slated to tour the country after its premiere at EMPAC, with stops at the Museum of Contemporary Art in Chicago, On the Boards in Seattle, and the Brooklyn Academy of Music.

But, as with Laurie Anderson’s Heart of a Dog and any number of other EMPAC commissions, as it travels, the project will carry with it the indelible Rensselaer stamp.
RAA Helps Bridge the Financial Aid Gap for Students

Announcing the Rensselaer Alumni Association Scholarship Fund

At Rensselaer, more than 90 percent of students receive some kind of financial aid. Yet we are only able to meet 75 percent of students’ financial need. Because of this need gap, we run the risk of losing talented students to other schools that can provide a more comprehensive financial aid package. Gifts to support scholarships help us bridge this gap and make a difference in the lives of our students.

The Rensselaer Alumni Association has undertaken a significant endeavor in its continuing tradition of support to the Institute, alumni, and current students by launching a $1 million student scholarship initiative. President Shirley Ann Jackson and RAA President Theresa A. Kozikowski ’85, ’86G, ceremoniously signed the endowment agreement in May 2016, commencing an effort where alumni may directly assist today’s students—our future alumni. The endowed fund at Rensselaer, established with a gift of $250,000 from the RAA, will be used to financially support scholarships for worthy and needy undergraduate students.

“The RAA Scholarship Fund was created to allow alumni and alumnae of Rensselaer to invest in scholarships to help bridge the existing financial aid gap for our students,” noted Kozikowski.

Your investment in the RAA Scholarship Fund will open up exciting new possibilities in the lives of Rensselaer students, and make it possible for us to bridge the gap between the actual cost of our world-class education and the amount of financial aid we are able to provide our students.

Anyone may contribute to the fund in support of students by visiting the “Give Now” page at alumni.rpi.edu/RAAScholarship. If you have questions, contact raa@rpi.edu or call (518) 276-6205.
SAVE THE DATE

Reunion & Homecoming Oct. 12-15

Come back to Rensselaer for an extraordinary weekend of friendship, education, entertainment, sports, and more!

MARK YOUR CALENDAR, AND PLAN TO JOIN classmates, teammates, Greek brothers and sisters, family, and friends for another extraordinary weekend. Rensselaer is especially excited to welcome back the great Class of 1967, who will celebrate their 50th Reunion.

Once again, the weekend will feature the President’s State of the Institute Address, academic and school-based programs, sporting events, student performances, and other special programs. The weekend will kick off with the highlight event, the Presidential All-Alumni Reception and Dinner, which will be held on Friday, Oct. 13. This elegant evening event is for all alumni, so plan to join us for an amazing experience.

Reunion & Homecoming is open to all alumni, but of special note are the classes ending in 2 or 7, who will celebrate milestone Reunions. Greeks take advantage of the weekend to gather for dinners, barbecues, and to celebrate anniversaries. Many athletics teams will bring together former athletes for friendly competition and to meet and cheer on our current teams.

Visit the website, alumni.rpi.edu/reunion, for a hotel listing, volunteer opportunities, preliminary schedule, and to tell your friends if you plan to be there!

Zeta Psi Gift

IN CONNECTION WITH ZETA PSI’S 150th anniversary, the brothers undertook a fundraising effort to support the Institute’s Center for Communication Practices by creating a “Presentation Practice” room. The room allows students to develop and practice any type of communications project, helping them to become better communicators. The effort raised $75,000, and the room was dedicated during the annual Zeta Psi alumni weekend.

STAYING CONNECTED

JULY

22 Annual Rensselaer Alumni Day at Del Mar Racetrack, San Diego, Calif. Join local alumni in a private box for an exciting day at one of America’s most picturesque and prestigious thoroughbred racetracks. Contact Susan Haight, haighs@rpi.edu, (518) 276-6042.

AUGUST

14 Men’s Hockey Annual Golf Outing at Shaker Ridge Country Club, Albany. Current team members and distinguished hockey alumni join for a day of competitive fun. Contact Peter Pedone, pedonp@rpi.edu, (518) 276-6061.

WORLDWIDE TRAVEL PROGRAM

Visit exciting destinations with alumni/ae who share common interests. Upcoming programs include the South Pacific, Panama Canal, and British Isles. Go to alumni.rpi.edu/travel for a listing of upcoming trips, or contact program coordinator Michael Wellner ‘64 at captmike46@aol.com or (212) 486-3064.

WELCOMING NEW STUDENTS

In the summer months, alumni chapters across the country will be welcoming our incoming class and their families to Rensselaer. Chapters host a wide range of programs, where new students meet alumni and current students, and have their last-minute questions answered. Visit alumni.rpi.edu/chaptersendoffs this summer to see what is planned.

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For the past 15 years, Lou Shornick ’39, age 98, has held a special place at the opening of the Class Notes. He worked diligently to keep in touch with and report on his classmates, but also interspersed his columns with memories of campus life and observations of change over the years. As a result, he became a favorite of readers of all ages.

An aeronautical engineering graduate (one of the first at Rensselaer), he worked at Wright Field in Dayton, Ohio, where his experiments in vibration pickups led to the first use of a new material called silicone. He served in the Navy during WWII. From 1950-73 he was involved in furniture manufacturing as president of Madison Furniture Industries. From the age of 8, when he acquired a $1 Brownie box camera, he became an avid lifelong photographer, and has estimated that he shot over 100,000 photos. A proclamation from the mayor of Madison, Miss., in 2008 noted: “Lou Shornick’s spirited and positive approach to life and to his art has been an inspiration to all who know him.”

We’re sad to report that Lou passed away on Dec. 21, 2016, following a short illness. We extend our condolences to his family and his legions of friends and readers; he will be missed!

—1944—

Send news to: L. McD. (Mac) Schetley ’44, 6782 14th Ave. North, St. Petersburg, FL 33710; teckley@gmail.com

—1945—

I received information about Robert Sageman (B.S. & M.S. EE), who died on June 20, 2016. He served in the Navy for two years following graduation and began his 38-year career with AT&T Long Lines in 1950. He married Jean Marie Bent and they embarked on their 42-year long adventure. Bob worked as a project manager on Telstar, the first private sector telecommunications satellite, then as chief engineer in Washington, D.C., and San Francisco. His next move was to New York as vice president of the nationwide long distance network. In 1980, he became president and CEO of AT&T International. He retired and moved to Carmel Valley in 1985. In retirement, Bob worked with the boards at Natividad Medical Center, Monterey Institute of International Studies, and the SPCA.

I’ve been in contact with Robert Summers (BAE) and knew there was an interesting career story there. I had a great talk with him to thank him for putting part of it in writing, as follows:

“I graduated in aerospace engineering, under wartime acceleration, in August 1944. I immediately accepted a position with the Glenn L. Martin Co. in Middle River, Md., as a junior aerodynamicist, at $1.05/hour! We worked on design/flight testing of the XBTM-1, an advanced dive-torpedo bomber, which Bush-1 would have flown in the invasion of the main islands of Japan if our two atomic bombs had not ensured the surrender of Japan.

“At V-J day, I became a graduate student at MIT, receiving my M.S. in ’46 and Sc.D. in ’54. I continued on some research projects at what is now called Draper Labs and then with several local startups. Mostly USAF R&D culminating in a system for employing a dropsonde to measure horizontal wind structure to improve the accuracy of high altitude bombng. We were very successful in building and testing the Windsone—then the ballistic missiles took over and our requirement became history.

“While a doctoral student at MIT in 1952, I was awarded an Alfred P. Sloan Exchange Fellowship to spend a semester in Stockholm at the Royal Institute of Technology. I made wonderful friends, rode motorcycles all over Sweden, and had the opportunity to plan out my Sc.D. thesis (“A Statistical Description of Atmospheric Turbulence”).

“I then accepted a joint director position at the Institute of Naval Studies. I was technical manager for the Starlight Program, assessing the impact of satellite technology on the future Navy. It culminated in a two-month off-site study in Santa Barbara. I then led a briefing team to Honolulu to brief CINC PAC Fleet.

“At INS I met my beautiful wife and we had a glorious three-week honeymoon in France and Switzerland. We are married for 54 years: producing identical twin girls and six years later a son.

“After our honeymoon we moved to Washington, D.C., to ‘help JFK get to the Moon.’ I accepted a position in the Office of Manned Space Flight as chief of long-range planning. We stayed in the D.C. area for over 40 years. I became interested in the application of satellite-based remote sensing to economic development in developing countries. We obtained support from AID and conducted studies in developing countries in Africa, South America, and Asia. This led to the development of reception and processing stations in Africa and Asia. It is now a well-established commercial operation supported around the world.

“I then joined DOE where I led, for the DOE Secretary, a comprehensive evaluation of the multifaceted fusion energy program.

“I then accepted an appointment with the ACDA (Arms Control and Disarmament Agency) as chief of verification and intelligence. Under joint DOE, ACDA, and State Department sponsorship, I led several programs aimed at discouraging specific nations from developing nuclear weapons. Our most important success was with the government of South Korea, under the direction of SecDef William Perry. We were then invited by the Chinese government to assist/advise them in defense system conversion, especially related to their nuclear weapons programs. This involved many visits to Beijing and to the Russian Nuclear Weapons Laboratories.

“I retired from the U.S. Senior Executive Service in 1995 and started a consulting career. Due to my wife’s advancing Parkinson’s disease, we relocated to Portland, Maine, in 2010 (her home town).”

Peter Richter (BME) was recently selected by the Maine Honor Flight organization, which takes senior veterans to Washington, D.C., to see the war memorials. Peter, who enlisted in the Navy at age 17, had never seen the National WWII Memorial, which opened in 2004 on the National Mall.

Peter grew up in New York, but his family vacationed in Yarmouth as far back as the late 1800s. He studied electrical engineering for one year at the University of Maine, and when he enlisted in the Navy, he was sent to continue his studies at Rensselaer. When he graduated he attended midshipmen’s school and trained on the Great White Fleet in New York Harbor. The war ended by the time Peter was assigned to a transport troop and sent to Japan to bring the troops home. He had started as a communications officer, and then became a navigator. Later, he obtained an MBA from Columbia University, and worked as an engineer.

Peter and his wife, Jane, who died two years ago, raised four children. They moved to Freeport, Maine, in 1992. His daughter, Katherine Hall, who lives in Orr’s Island, keeps a good eye on him.

Our classmates have been busy over the last 71
Reunion & Homecoming Weekend in October offered a wide variety of events for classes, Greeks, athletic teams, and special-interest groups, highlighted by an all-alumni dinner and a National Medalists symposium. The Class of ’56 brought 33 classmates to campus to celebrate their 60th Reunion, many of whom are pictured above at their class dinner in the Heffner Alumni House.

years in many different companies and all around the world. You can be proud to be part of the Class of ’45! Has your career story been told yet? If not, get busy and send it along.

Send news to: Herb Asbury ’45, 4435 Foxenwood Lane, Santa Maria, CA 93455; asburyh@aol.com

—1948—

Fran Loud writes: I noticed that there have not been any notices regarding members of the 1948 classes in the alumni section of the last two issues of the Rensselaer magazine, so I thought I would check in. My wife, Grace, died in May of 2014 after almost 63 years of our marriage, but I am doing quite well. I am in good shape in both head and body, and I am still very capable of driving my car. In fact, in some ways I am a better driver now than I used to be, because I am more patient. I enjoyed playing nine holes of golf several times during the summer. One problem I had was that on quite a few shots my old eyes did not pick up the flight of the ball, so I did a lot of extra walking to find the ball. One other factor was that when I hit a good shot, it went only half as far as I used to hit it.

My regards to all my classmates.

—1949—

With great regret we must advise that Robert Jaros (BCH) passed away Aug. 28, 2016. The brief note from his wife said that their daughter graduated from RPI in 1982, their grandson in May 2016, and a granddaughter is in her second year at RPI! Now there is an RPI family; one that is surely a great tribute to both Mr. and Mrs. Jaros and to the university. Regrettably, the note provided only the above information. Those of you who knew Robert are encouraged to submit information so that we might have a better picture of the man.

We received a brief note from George Washburn. He’s a civil engineering grad who spent 37 years employed by Power Utilities in New England, Hartford Electric Light, and Northeast Utilities. Prior to that he spent some time as a B-24 pilot, 8th Air Force, through 1944. He’s been retired for almost 30 years and has lived in Tampa, Fla., for the last 12. George says it’s easy living down there, and apparently he’s worn out more than a few golf clubs! Said he hasn’t heard about any classmates in recent years and would welcome hearing from anyone. His address is: 11505 N. Armenia Ave., Tampa, FL 33612; phone: 813-932-6425; email: liberatorpilot@msn.com.

Send news to: Fred Grob ’49, 4 Albatross Lane, Smithtown, NY 11787; fredgrob78@gmail.com

—1950—

Greetings from Bob Pfeiff, who has signed on for a tour of duty as class correspondent. Herb Kee’s years of service are gratefully acknowledged. Bob who? Think: four years of “Photo by Pfeiff” credits in the Poly and editor-in-chief of your 1950 Transit. I am looking forward to hearing from you and publishing as many notes as possible contributed by you about you and about classmates you associate with. Please!

In October, the Institute’s promotion of the 2016 Homecoming Weekend and mailings from the NROTC unit drew my attention. NROTC were to be celebrating the 75th anniversary of the program. No mention was made of the 70th anniversary of the postwar (1946) revised program in which many of our class were the first participants. When I checked the list of Class of 1950 registrants for the Homecoming, there was only one name: Charles Truax (EE). Bingo! Charlie was a fellow midshipman in that program. He returned my calls and spent almost a couple hours with me reviewing the 66 years since we had last spoken. Charlie, who lives in nearby Mechanicville, agreed to provide a report of his attendance at the NROTC ceremony. Here it is:

“On Oct. 8, 2016, I attended the 75th anniversary celebration of the RPI NROTC in the Alumni Sports and Recreation Center, previously the Armory, on 15th Street. CAPT Arensmeyer, present Commanding Officer, introduced RPI President Dr. Jackson, who gave a brief talk about the contributions of the NROTC to RPI and the nation. Following her, CAPT Terry Jones USN (Ret), a 1966 RPI NROTC graduate with 26 years in the Navy Nuclear Submarine Force, spoke. I was the oldest graduate from the post-WWII NROTC Program proposed by Admiral
Ed Miller ’46 celebrated his 70th Reunion with a “herd” of family and friends who commemorated the occasion with special T-shirts. The shirts recognized Miller’s milestone Reunion as well as his position as patriarch of the “Elk Herd”—a group that grew over the years to include RPI friends and family who shared ski trips to a western mountain that, as Miller says, “more elk than people.” The skiers developed a special signal, two ski poles raised above their shoulders like elk horns, to keep track of each other.

Three of Miller’s four sons, Nelson Miller ’72, Scott Miller ’75, and Nicholas Miller ’79, as well as his granddaughter, Erin Miller ’13, are all Rensselaer graduates. The elk herd also includes the “Manory group,” Rensselaer alumni who roomed with Miller’s sons in an apartment above Manory’s restaurant in downtown Troy.

At Reunion, Miller was honored as the oldest returning alumnus. He took part in the 75th anniversary celebration of Naval ROTC, at which the youngest midshipman and the oldest alumnus in attendance perform the ceremonial “cutting of the cake” to symbolize the passing of tradition from one generation to the next (see page 17). Miller, standing seventh from left, above, served as class correspondent for 25 years, “retiring” from the position in 2016. Many thanks, Ed!
Tony Diamond and his wife spent a good deal of time on campus in the library gathering history, particularly on sports, during the time we were on campus. Tony said he would send me what they had collected in order that I might be able to make it available to others who are interested (send me an email at rpopeano@earthlink.net if you want a copy). Tony spent his entire career working at NASA, where his first boss was George Low ’48, the 14th president of RPI.

Frank Paolini says he has done quite a bit of writing during his career and has a hobby of writing limericks, traditional ones and also haiku, a major form of Japanese verse. I spent most of my time with Harry Cotesworth, who is a consistent RPI supporter, at a Sunday brunch where we both vowed to attend next year’s reunion, circumstances permitting. I was happily surprised to meet John Schweiker at the 50 Year Club luncheon as he had not responded previously to my email conversations, and he’s practically a neighbor.

The reunion was great; the best one I have ever attended. Everything was well organized and executed like clockwork. There was plenty of transportation around to get people from one place to another with great service from a host of volunteers. There were so many activities planned it would be hard to imagine anyone would have a problem planning interesting days. We took in an entrepreneurial showcase put on by the Lally School where nine groups of budding entrepreneurs gave their elevator pitches for exciting products and services. There was a 50 Year Club luncheon with the Class of 1966, the new club members. The football team won their game against Hobart on a picture-perfect October day. Then there was the marvelous President’s Dinner which was the main reunion weekend event for all attending alumni. I, along with two others, was asked to get up to the podium with Dr. Jackson to talk about our financial support. Our script went something like, “Our Class of 1951 has had a long and loyal history of support for Rensselaer. We are proud to report that in honor of our 65th Reunion year, to date, our class giving total has reached $729,003 and we have achieved 28 percent participation in giving.”

But I couldn’t resist ad-libbing, “and by the way, that $3 is where I came in.” It was good for a little laughter.

There is more about the reunion on the rpi.edu website with pictures and some videos, including Dr. Jackson’s State of the Institute address followed by a question and answer session. I specially remember those close to my activities: the swimming teammates, EE classmates, fraternity brothers (I was president of Phi Iota Alpha), chess club members, and friends in general.

On the business front, I decided to come to the reunion this year. In 1951, 65 years ago, I was meeting my future wife during my summer vacation in my hometown, Havana, Cuba.

“Just before graduation the democratically elected government in Cuba was overthrown by a dictator. My first job after leaving RPI was at a sugar mill and power plant on the countryside in eastern Cuba, close to the mountain range Sierra Maestra where later Fidel Castro’s guerrillas landed. I left this job and area in 1955. I should only say that the engineer replacing me was killed in a guerrilla attack.

“I moved to the city of Havana and worked for the Westinghouse distributor, in charge of elevator and escalator projects. Later I started doing consulting work on the design of a power plant for Cubamin, a chemical company, and teaching at St. Thomas Catholic University.

“In spite of the dictatorship, life in Havana was normal and enjoyable at that time but the political situation began to deteriorate as Castro’s revolution started to move east. After a short time there were revolutionary underground activities, political unrest, worker strikes, and some terrorism acts. My younger brother was involved in the worker strikes against the government.

“In December 1958 the situation became critical. Guerrillas were active on the central provinces, attacking the army at different towns. A group of students in Havana decided to join the revolution and start guerrillas in the west. They were killed by the army; one of them was my student at the university.

“In 1959 we had the collapse of the government and the guerrilla take-over. They applied communist policies, the Agrarian Reform (all land taken by the government), the Urban Reform (everybody given property of the place he/she lived), and similar decrees for any kind of private property (industries, corporations, universities, hospitals, etc.).

“As a result, in January 1961 I found myself as a Cuban refugee in Miami with $5 in my pocket, a wife, and three young children. But I knew what to do. I am grateful to RPI for the fundamental engineering and science education given to me.

“In Miami the exiled community at that time was preparing an invasion to recover the island. Some of my high school friends were active on this. At least one participated in the Bay of Pigs invasion. My brother in Cuba was still pro-Castro. I had to make decisions. After 12 weeks considering a come-back-to-Cuba project, I decided otherwise.

“I decided to come back, but to the Northeast U.S. instead. Since I had lost almost all in Cuba, my house, my job, my car, etc., I decided to do what I really wanted, to work and obtain a Ph.D. in physics. I had a friend, also an RPI alumni, who was in Boston.

“I started to work for the Cambridge Electron Accelerator, a new high energy physics laboratory financed by the Atomic Energy Commission inaugurated at the Harvard University campus in 1961. I was also able to take the necessary graduate courses. We all remember the early Cuban Missile Crisis at that time.

“Since then I have done research on theoretical physics and became a professor of physics. I believe that I made contributions to physics in the area of energy-mass and unified interactions, have written two books on the subject and many articles.

“Lately I had been associated with Universidad Simon Bolivar in Venezuela. But now after 50 years, the same type of Castro-Chavez communist revolution is happening in Venezuela and I lived through it for a second time. There may be a mysterious nonphysical force around my life! I became an American citizen and am now living and writing in Pensacola Pines, Fla.”

For our fanatic football fans, RPI played Hobart during homecoming and rallied in the last 19 seconds to score a touchdown and win 21 to 17. Go Red! Hope to see you all in October 2017.

Send news to: Fred Williamson ’51, 23 Briarwood Drive, Old Saybrook, CT 06475; john_f_williamson@comcast.net

—1952—

65th Reunion: Oct. 12-15, 2017 Mark your calendars, classmates! There are only six months left before our 65th Reunion—October 12-15, 2017. I had planned to see Don Spanton at Reunion 2016 in October. We were dorm mates in our freshman year in 13 Peoples Drive (Tin Town). Unfortunately, Don passed away on Oct. 7, 2016. Don was born in 1930 in Rochester, N.Y. He married his beautiful wife, Jane, in 1956 and they celebrated 60 wonderful years together in 2016. Don served in the U.S. Army in Korea and then in the U.S. Army Reserves for a total of 28 years, retiring as a Lt. colonel. His education included Rensselaer, Georgia Tech, and lastly, American University for his Ph.D. His professional career included Taylor Instruments, Lockheed Martin, IBM, and the Federal Railroad Administration. When he retired from Meredith College, he was the head of the Business Department. He is survived by his wife, Jane; one son and three daughters; and nine grandchildren.

At Reunion I sat with Gustavo Gonzalez (BEE) at the All-Class Dinner. I asked Gus to provide us with a history of his career, which follows:

“In 1952 I graduated from dear old Rensselaer as an EE EE. I have been back to Troy for a reunion five times or maybe more. It is always a pleasure to meet and remember old friends and places, although the ‘52 crew coming to reunions is painfully shrinking. I specially remember those close to my activities: the swimming teammates, EE classmates, fraternity brothers (I was president of Phi Iota Alpha), chess club members, and friends in general.

“My wife passed away last April and I decided to come to the reunion this year. In 1951, 65 years ago, I was meeting my future wife during my summer vacation in my hometown, Havana, Cuba.

“Just before graduation the democratically elected government in Cuba was overthrown by a dictator. My first job after leaving RPI was at a sugar mill and power plant on the countryside in eastern Cuba, close to the mountain range Sierra Maestra where later Fidel Castro’s guerrillas landed. I left this job and area in 1955. I should only say that the engineer replacing me was killed in a guerrilla attack.

“I moved to the city of Havana and worked for the Westinghouse distributor, in charge of elevator and escalator projects. Later I started doing consulting work on the design of a power plant for Cubamin, a chemical company, and teaching at St. Thomas Catholic University.

“In spite of the dictatorship, life in Havana was normal and enjoyable at that time but the political situation began to deteriorate as Castro’s revolution started to move east. After a short time there were revolutionary underground activities, political unrest, worker strikes, and some terrorism acts. My younger brother was involved in the worker strikes against the government.

“In December 1958 the situation became critical. Guerrillas were active on the central provinces, attacking the army at different towns. A group of students in Havana decided to join the revolution and start guerrillas in the west. They were killed by the army; one of them was my student at the university.

“In 1959 we had the collapse of the government and the guerrilla take-over. They applied communist policies, the Agrarian Reform (all land taken by the government), the Urban Reform (everybody given property of the place he/she lived), and similar decrees for any kind of private property (industries, corporations, universities, hospitals, etc.).

“As a result, in January 1961 I found myself as a Cuban refugee in Miami with $5 in my pocket, a wife, and three young children. But I knew what to do. I am grateful to RPI for the fundamental engineering and science education given to me.

“In Miami the exiled community at that time was preparing an invasion to recover the island. Some of my high school friends were active on this. At least one participated in the Bay of Pigs invasion. My brother in Cuba was still pro-Castro. I had to make decisions. After 12 weeks considering a come-back-to-Cuba project, I decided otherwise.

“I decided to come back, but to the Northeast U.S. instead. Since I had lost almost all in Cuba, my house, my job, my car, etc., I decided to do what I really wanted, to work and obtain a Ph.D. in physics. I had a friend, also an RPI alumni, who was in Boston.

“I started to work for the Cambridge Electron Accelerator, a new high energy physics laboratory financed by the Atomic Energy Commission inaugurated at the Harvard University campus in 1961. I was also able to take the necessary graduate courses. We all remember the 1962 Cuban Missile Crisis at that time.

“Since then I have done research on theoretical physics and became a professor of physics. I believe that I made contributions to physics in the area of energy-mass and unified interactions, have written two books on the subject and many articles.

“Lately I had been associated with Universidad Simon Bolivar in Venezuela. But now after 50 years, the same type of Castro-Chavez communist revolution is happening in Venezuela and I lived through it for a second time. There may be a mysterious nonphysical force around my life! I became an American citizen and am now living and writing in Pensacola Pines, Fla.”

For our fanatic football fans, RPI played Hobart during homecoming and rallied in the last 19 seconds to score a touchdown and win 21 to 17. Go Red! Hope to see you all in October 2017.

Send news to: Harry (Bud) Hovey ’52, 15 Sylvan Lane, Troy, NY 12180; hovey@uf2b.com

—1953—

Marge and Bob Goldberg (auberg@comcast.net) have moved to an independent living facility, The Cedars, in Portland, Maine.

Staten Island, N.Y., is planning to build a huge 550-foot Ferris wheel which will cost $590 million (www).
Dick Opsahl (opsahl@mac.com) promotes the “Mac” computer at the computer class he teaches in San Francisco. His other hobby, lawn bowling, is easy to learn, but difficult to become proficient in.

We attended with Linda and Bill Glaser a very successful Entrepreneur of The Year (EOY) event created in 1990. This year Robert Godgart ’52 was the recipient of the award. Bob is a serial inventor who created five companies. One company pioneered computer applications in architecture, Image Systems Technology, which puts paper drawings on a PC computer. Another company was PowerADZ, which revolutionized newspapers by putting 800 newspapers online. His best known company is AutoFisk, a leading information technology and management of software business. Bob enthralled his audience with the volatile, stressful challenges and opportunities in the business world, which was fostered by his years at RPI.

Reunion weekend, October 2016, was a treat. A seminar included three National Medal winners. Jayant Baliga ’74 discussed power electronics; Marcian “Ted” Hoff ’58 fathered the microprocessor; and Steve Sassen ’72 invented the digital camera at Eastman Kodak. Kodak neglected to use the technology and thus went bankrupt. Part of their stories involved management’s inability to accept change and plan for the long-term welfare of their company. Dr. Shirley Ann Jackson updated us on the many advances in student life, research, teaching, and athletics in a comprehensive audio/visual presentation. A very stimulating weekend!

Dr. Brooke Schumm (eagle.cliffs@prodigy.net) was in attendance for the weekend. Brooke is a chemical engineer who was a consultant to the battery field. He is connected to Eagle Cliffs Inc. in Ellicott City, Md.; however, he lives in Columbus, Ohio. Brooke has 18 grandchildren.

I look forward to hearing from you.

Send news to: Arthur Goldstein ’53, 940 Sylvan Lane, Mamaroneck, NY 10543; ageant@aol.com

—1954—

Ed Walker sent this message: “The full RPI magazine had two things that caught my attention: the article on co-op students and your 1954 class notes.

“I was an EE co-op back when it was sponsored by GE. In our freshman year I believe there were 10 of us: seven EE and three ME. At our 50th I hooked up with a couple of them accidentally and relived the strange sequence of classes and work as test engineers for GE. I wonder if someone might have contact with any staff or faculty who might have published something about that co-op program. From your column I noted Zev Rosen’s name. Deep in my brain is the thought that he was one of our group.

“I was Theta Xi and to my knowledge there are only four from our pledge class still around. It will be a minor miracle if we make it to our 65th in 2019. I especially liked your comment, ‘Obviously, our successful careers, the result of our excellent RPI education, have resulted in comfortable retirements.’ I have a comfortable retirement; however, I don’t think my career path followed the norm, as I moved away from EE and got ‘education’ from several other institutions.”

Send news to: Bob Meyers ’54, c/o Class Notes, RPI, 1000 Troy Building, Troy, NY 12180; bhp.meyers@aol.com

—1955—

Marcia and I enjoyed several trips last year—Florida and Mexico in February, Portugal in April, our annual trip to a Michigan lake in July (visiting Julie and Phil Carroll en route in Ann Arbor), and Santa Fe in August. Incredibly, Phil ran another full marathon in October, his 30th Detroit marathon and more than 60 overall. He was the oldest runner to finish and got a nice write-up in the Detroit newspaper.

Henry Brecher, our class’s polar explorer, still works at the Byrd Polar and Climate Research Center at Ohio State, making topographic maps of ice to track climate change. He has done field work in Antarctica, wintering over and reaching the South Pole by land, and in Peru, climbing to 18,500 feet to photograph glaciers. Now officially retired, he comes to the office daily. “I pick my hours. There’s always something to do. I’ve become the institutional memory.” Henry is also an amateur pilot, including some acrobatic flying, but now has difficulty getting a medical certificate. A few years ago he built a helicopter from a kit and in 2014 flew it with an instructor. There was an engine problem, the instructor botched the landing, both had broken vertebrae but managed to exit, and the helicopter totaled in a ball of fire. Henry is fully recovered, but “since then I haven’t been motivated to build another one.” His less exciting activities include classical music and serving on the board of his former boarding school.

Joe Buerk sold his Florida condo and is back full time in Vernon, Conn., where he can be closer to his five children and better able to attend to his wife’s medical problems. “We spend a lot of time going to doctors.” He has recovered from knee surgery but has some back problems. “I’m not doing woodworking, which I love to do. I used to help the kids with construction projects. Now I call them for help,” Joe serves as treasurer of his condo association.

George Gifford is still working, in his own business listing and selling residential real estate. “It’s full-time, but you put in what you want. You have to keep busy. I can use my engineering background on structure questions, but I don’t get too far into it because of legalities.” The Giffords traveled to Bolivia a few years ago to visit his good friend Fernando Illanes, who had a distinguished career ranging from tenor understudy to Pavarotti to serving as Bolivian ambassador to the U.S. George recalls their RPI glee club days under Prof. Joel Dolven, with Fernando as a lead tenor. “If you have one or two strong voices, it brings the rest along.” (Your correspondent has pleasant memories of Prof. Dolven. His music appreciation course, taken senior year, ignited a love of classical music. Today the math, physics, and most of the engineering are forgotten, and this is easily my RPI course of most lasting benefit.)

Bill Highleyman is also still working, “pretty much full time,” as a computer consultant. An expert on internet availability, he is editor and publisher of Availability Digest, a free monthly periodical (availabilitydigest.com). A pilot, Bill met his wife, Janice, a flight instructor, “when I ran into her plane on the ground.” He still pilots, although no longer solo. Bill also continues skiing, now mostly cross country because of back problems.

Another still working! Larry Kashar continues running his practice as a forensic metallurgist. “But not as much as I used to. I do half as much but it takes me full time to accomplish it. Frankly, the clients have noticed this also and give me easier jobs.”

One new area of analysis is wind turbine blades. But not all his work relates to new technology: “Most of the things that break have been around for a long time.” In terms of health, Larry reports that he looks OK from the outside, but some internals have passed their expiration date. He and Barbara enjoy visiting their children in Berkeley, Calif., and in central PA.

Frank Lindquist died in October after a bad fall several months earlier. His career was with CalTex, including assignments in Australia, Singapore, and South America. Over the years he had visited often with Neil MacFarlane, as their wives had been friends at Skidmore.

Charlie Lord reports that he is doing fine despite some problems with spinal stenosis. “I have finished with sailing and canoeing. We are just back from Alaska but have cut back on travel after visiting all the continents except Australia.” He has finished working on genealogy after tracing his family back to their arrival in the U.S. in 1635. But he hasn’t lost his aptitude for engineering. The Lords live on a lake where beavers have replaced a failed dam by building a 100-yard dam holding back three feet of water. “I put on boots and reinforce the dam with polyethylene sheet. Then they raise the level, and I have to go out again.”

When I spoke with Ed Nellis in September he had recently met for lunch with Art Maffei. Ed has bad knees but is in reasonably good health. However, his wife has had Parkinson’s disease for eight years, and he is her caregiver. Ed and Emma have daughters in the Denver area and used to visit both them and Art Wills there, but they no longer travel. He is grateful that they did travel extensively overseas in earlier years.

Bob Renza serves on a citizens’ advisory panel seeking uses for vacant land near the Hudson River that was once the research center of Texaco, his former employer. “But because of the chemicals, nobody wants to touch it.” Once world travelers, the Renzas now stay closer to home because of health problems. “We are reduced to going to casinos with friends.” Bob also spends less time on
Hey! You Wanna Start Somethin’? Elements of Entrepreneurship
George Vogel ’59 • Tate Publishing, 2016
In his 47-year career, the author was directly involved with the formation, building, operating, and selling of a number of enterprises. A series of jobs provided practical training in entrepreneurship—and then ultimate business success. As this process evolved he determined that the application of a group of key elements, separately or in combination, resulted in positive outcomes many more times than not. This book delivers, in straightforward terms, a unique perspective that can be enlightening to those contemplating or already engaged in a wide variety of business endeavors.

George Vogel ’59 spent his career providing specialized cooling equipment designed for the computer and electronics industry.

Liberation Is Imperative
Kevin Knight ’98 • 10-10-10 Publishing, 2016
In Liberation Is Imperative, the author goes beyond the practical guide to achieving success in your life by providing principles that challenge and empower you to overcome obstacles, run after your dreams, and fulfill your divine destiny. This book is designed to help you break free from negative thinking and limiting beliefs, strengthen your confidence and self-esteem, and find your passion and pursue work you love.

Kevin Knight ’98 is an award-winning author, speaker, trainer, and coach, with a record of enhancing performance for individuals and companies.

Finding Alaska’s Villages
Alex Hills ’64 • Dog Ear Publishing, 2016
Alex Hills traveled Alaska by bush plane and snow machine, braving extreme weather and rough terrain to bring telephone service to small villages across the big state. Then he developed a new public radio station to serve the people of Alaska’s huge northwest region. In Finding Alaska’s Villages, he tells this story and how he helped the state’s telecom pioneers bring about an innovation that would forever change rural Alaska. It took some technical work—and some convincing of government officials and corporate executives—to make it happen.

Alex Hills ’64 is now Distinguished Service Professor at Carnegie Mellon University, where he led the team that built the first large Wi-Fi network.

Extreme Operational Excellence
How does a group of 130 men with an average age of 25 operate a nuclear power plant in the ocean’s harshest environments while conducting complex clandestine operations aboard a 6,900-ton warship with nearly flawless results? The answer lies in the community’s culture, which epitomizes the tireless pursuit of operational excellence. In this book the authors show how any organization can significantly improve its operations through the use of the fundamental components of the nuclear submarine culture.

Matt DiGeronimo ’99, a retired naval officer, nuclear engineer, and business turnaround specialist, is vice president, operations, for Veolia North America.

investing: “I lucked out in the stock market in the ‘90s and now try to live on the interest.” Bob and his wife have lived 37 years in the same house, now much remodeled.

Send news to: John Schmidt ’55, 11 Honey Lake Drive, Princeton, NJ 08540-7435; theschmidts2@hotmail.com

—1956—

Our 60th Class Reunion has come and gone and my thanks go out to the 33 members of the class that attended and shared their memories and experiences to make it a great success.

Our class president, Jerry Reinert, wrote: “Our 60th Reunion is now behind us. The attendees came from far and near; from California, to Florida, and Troy, N.Y. It was wonderful seeing, talking, and fraternizing with our fellow alumni. All the events were fun: meeting at the registration desk, the ‘Life of George Low’ event in the Low Gallery exhibit in the Low Building; the 50 Year Club Luncheon at which we heard President Jackson’s State of RPI current and future address. Sam Heffner spoke at our class lunch on Saturday, followed by the RPI vs. Hobart football game. Believe it or not, RPI won. The alumni class parade took place on the field at halftime.

“Our class dinner was Saturday night. As class president, I spoke. I tried to make it fun and informative: We had one female in our class; now 38 percent of the class is female. They live in co-ed dorms. Tuition was $700 for our freshman year; now it is about $49,500. Unfortunately the list of those who have passed on numbers 198. After my talk we had a contest of a series of questions: ‘Who has the most kids (10), most grandkids (20), etc.’

“Dr. Frank Griggs Jr., the Reunion committee chairman, did a phenomenal job. His enthusiasm, energy, and ability were the reason for the great weekend. All of the committee members did a great job. Our RPI assistant assigned to us, Kathlyn Lounsbury ’15, was incredible. To those who were there, thanks for coming. To those who couldn’t make it, I understand; life is not easy at 81. I hope to see you all at our 65th in 2021 (we’ll only be 86), and at RPI’s 200th birthday in 2024 (we’ll only be 90).”

As a part of our planning for the Reunion we asked each attendee to submit a recent photograph and a brief summary of their career and retirement. All of these are online on our Class of 1956 website at http://fgriggsjwixsite.com/rpi-class-of-1956. I will continue to provide brief summaries of their careers here.

Alan Dolmatch: “After eight years of being an engineer I re-treaded as an architect, spending four more years at MIT to get an MArch. My subsequent career was unconventional, with transitions from architectural design and planning into development and eventually into real estate investment advisory services. In the ’80s and early ’90s I was the in-house A&E (architectural, engineering, and environmental) guru for a prominent real estate investment adviser that created and managed the real estate portfolios for large corporate, union, and state pension funds. I finally went out on my own in 1993, setting up and running my own small firm to perform A&E due diligence for real estate investors, retiring after 11 years in 2004.”

Art Frelich: “In the fall of 1956, I joined the U.S. Patent Office as an examiner and entered GWU law school in the night program. While rooming with the late Dean Schron for several years in the Washington, DC., area, we managed to work full time, keep up with our studies, and party occasionally. I met Kitty at one of those parties and we recently celebrated our 57th anniversary. Along the way, Kitty and I have raised three children who have collectively given us eight grandchildren. After graduating from law school in 1960, we migrated to Los Angeles for a job with Ramo Woolridge. In 1963, I entered private law practice and have been happily engaged ever since.”

Ed Woerner: “After graduation I worked for ALCOA for four years before coming home to the family machine shop in Jersey. I ran that for many years and in 1986 started ECS, Essential Components & Spares Co. Inc. and still operate it—we make spare parts for elevators and escalators. I am still active athletically—play handball three times a week and lift weights once or twice a week.”

Frank DuBois: “Shortly after graduation I was called for active duty in the USAF. I served in the North American Air Defense Command as an intercept director in Port Austin, Mich., and Syracuse, N.Y. In November 1959 I came to Schenectady to work in reactor physics for GE at Knolls Atomic Power Laboratory (KAPL). We were
designing reactor power plants for U.S. submarines and surface ships. At that time there were eight test reactors (critical facilities) at KAPL doing various types of tests in support of the development of design methods and to evaluate design features. I worked at KAPL until retiring in 1992.”

Jim Gerrie: “Upon graduating from RPI in 1956 I joined IBM’s Federal Systems Division in Industrial Engineering. Having earned the rank of 2nd Lt. through ROTC, I was committed to a two-year tour of duty. I was assigned to Orleans, France, responsible for the Field Liaison operation. I traveled throughout Europe assisting local supply agencies in using the Modern Army Supply System. IBM had my job in Owego, N.Y., awaiting my return. I started in IE but soon had the desire to join the IT organization. Four years later we moved to Buffalo as the systems engineering manager for large system accounts. Then a move to a staff assignment in Syracuse, N.Y., with responsibility for large systems in one of 12 IBM districts. Joining the Western Region staff gave me responsibility for the systems assurance program and the customer executive planning activities. I then became the lead health-care marketing representative for Southern California responsible for all major hospitals, several hospital management companies, and the nation’s largest HMO, Kaiser Permanente. In 1993 I retired from IBM.”

Paul Pillsbury: “After graduating from RPI, I went to MIT, where I received an M.S. in mechanical engineering. Subsequently, I worked for approximately 15 years for the Pratt & Whitney Div. of United Technologies in East Hartford, Conn. Starting in 1972, I worked for approximately 15 years for the Westinghouse Electric Corp. at three of their facilities in the Philadelphia area, specializing in combuster design and fuels technology for their large gas turbine (combustion turbine) division. In 1987, Westinghouse transferred me to their Orlando, Fla., facility, where I continued to specialize in combuster design and fuels technology. I worked there for approximately 15 years. During this time, our division was purchased by Germany’s Siemens Corp. When I retired in 2000 I was an employee of Siemens.”

Peter Lalos: “Upon graduation, I was commissioned in the Navy and assigned to the former Bureau of Ordnance in Washington. During my tour of duty, I was engaged in matters involving prospective mobilization in the event of hostilities with the Soviet Union. This included communication with and travel to naval facilities throughout the U.S. Following my naval tour, I graduated with an LLB. from the Washington School of Law of American University, and then received an LL.M. from the Georgetown Law Center of Georgetown University. In 1962, I was admitted to the practice of law in Virginia, and soon after formed my own patent law firm in Washington. Having practiced law for over 50 years, I have had the privilege of representing many U.S. and foreign clients, trying cases in 15 states throughout the U.S., and forming many personal friendships with clients.”

Stan Amberg: “I received USNR commission (ensign); applied for Destroyer/Atlantic; got ONI/Pentagon. RPI engineering put me on CNO (Arleigh Burke) briefing squad, who watched the Navy’s Vanguard rocket blow up on launch pad, and who then heard rather salty words from Adm. Burke. After Navy, got S.M. in nuclear engineering from MIT and LL.B. from Harvard Law School. Then did patent litigation for 53 years with three firms: Davis Hoxie Faithfull & Hapgood; Orrick Herrington & Sutcliffe; Barltt Beck Herman Palenchar & Scott.”

Bill Galloway wrote he had worked for years with the Bethlehem Steel Co. and later with the Pfaudler Co. in Rochester, N.Y. In his retirement he “ran away with the circus” and works summers with the Billy Martin Big Top Circus.

John Augstell: “I worked for 36 years at the Knolls Atomic Power Laboratory in the Naval Reactors Program. Our work covered design testing and operation of naval nuclear power plants and was both challenging and rewarding. I would do it again!”

Check out the website for images of our graduation and 60th Reunion. I will update it from time to time with new class information. Anything you would like to place on the website, send it along.

Send news to: Frank Griggs ’56, 30 Bradt Road, Rexford, NY 12148; fgriggs@verizon.net

—1957—

60th Reunion: Oct. 12-15, 2017 ’57 is making excellent progress toward having a record turnout at our 60th in October ’17 with almost 70 classmates planning or considering attendance, together with wives and special others making for a total of almost 140. “Hats off” to Doug Hasbrouck who’s doing much of the heavy lifting in organizing this! And Rex Krueger, in leading our class efforts together with the Reunion Committee, has put together a ’57 Class Endowed Fund, which has been described in a letter to the Class of ’57, and which he describes below:

“Your class Reunion Committee wants to remind you that it has established an Endowed Prize Fund with RPI, from which income will provide an annual award to an engineering student who embodies the qualities and values held close to the hearts of the Class of 1957. Nominees must demonstrate high academic achievement (GPA of 3.5 or greater), and personal service to both Rensselaer and the broader community. (Rensselaer’s rules for such funds required us to select one school from which students will be eligible to apply. A large majority of our class graduated from the School of Engineering, so that was the obvious choice.) Our fund is named “Class of 1957 Spectrum Award: Academics, Service, and Involvement.” The Fund will become operational when the $50,000 minimum funding level is reached.

“The Reunion Committee believes so strongly in the value of this endowed fund, which will for many years reflect our class’s thanks to the Institute, that together we pledged more than $15,000. Several others from our class have already contributed, with pledges now totaling over $25,000. We hope to present the first Prize at our 2017 Reunion class banquet, which will require that we achieve full funding early in 2017. So please consider making a gift to the Fund and helping us reach our goal quickly.

“If you no longer have the required Gift Agreement form sent to you in the fall of 2016, you can contact Stephanie Smith, advancement officer at Rensselaer (bmails@rpi.edu), (518) 276-8242, Rex Krueger (rex@bendable.com), or Doug Hasbrouck (ezpar57@verizon.net).

We of the Reunion Committee look forward to seeing you all in Troy in October. Trust all is well with you and yours, and that ‘17 continues to bring blessings to ’57!

Send news to: J.R. “Buzz” Campbell ’57, 858 Washington St., Ste. 302, Dedham, MA 02026; JRCampbell2@gmail.com

Leon Sokol informs that after 41 years of having his own law firm, Sokol Behot, LLP, he joined Cullen and Dykman, LLP, on Aug. 1, 2016. He states that “to do something for my 80th birthday, becoming part of a 150-attorney firm as a senior partner was interesting. Cullen and Dykman has offices in Wall St., Garden City, and Albany, and Sokol Behot has offices in Hackensack and Princeton, N.J., so the combined firm now has a larger footprint in the Metropolitan New York area.” Leon stays in touch with classmates Harvey Ber- man, Chet Vogel, and Gerry Nelson.

Send news to: Jim Augstell ’58, 22 General’s Way, Clifton Park, NY 12026; augjli@juno.com

George Vogel (Alpha Epsilon Pi) has written a book that is now in print titled, Hey! You Wanna Start Somethin’?—Elements of Entrepreneurship, from Tate Publishing.

George chronicles his 47-year career in the field of designing and manufacturing cooling equipment for the computer and electronics industry. He was directly involved with the formation, building, and selling of a number of enterprises. A series of jobs led him on a path that provided practical training in entrepreneurship and then ultimate business success.

He describes, in straightforward terms, how this was accomplished. Over time, he determined that the application of a group of key elements, separately or in combination, resulted in positive outcomes many more times than not. These “elements of entrepreneurship” formed the basis of an approach that worked (still works)—a unique perspective that can be enlightening to those contemplating or already engaged in business environments. George characterizes the process as timeless.
George and his wife, June, have been married for 54 years (wow!) and live in Santa Fe, N.M. They have two kids—daughter April and son Glenn. April and her husband, Carlos, are both clinical psychologists and they have recently relocated to Santa Fe. Glenn is a graphic designer for Sage Publishing and lives in Agoura Hills, Calif.

In his spare time, George plays lots of tennis, both singles and doubles, is an active photographer, judges science fairs, and hikes in the mountains. Winters are spent in Sarasota, Fla.

Wedding bells for Joe Morein. Karen Ganz and Joe were married on October 22. Ceremony and reception were at the Harvard Club in New York City. They met at the Manchester Country Club in Manchester, Vt., where they each had "second" homes. Both are golfers.

Joe wrote they have now sold both those houses. Now living in Ardsley, N.Y. Given their travel schedule, they are not in Ardsley very often. A trip to Cuba was planned for November.

Joe also commented that his son, Steve, is now the proud father of 10-month-old twins girls.

Send news to: John Lindsay ’59, c/o Class Notes, RPI, 1000 Troy Building, Troy, NY 12180; bblanchfield@ fssetlement.com

—1961—

Reunion & Homecoming 2016 was an impressive event. Not great numbers of classmates but the quality was there. Saturday night dinner at the Troy Country Club had a good group of classmates and spouses. Dan Brandel and Joanne Jensen, Werner (Dick) Dickmann and Marcia Dickmann, Kay and Murray Edelberg, Carol and Dennis Fitzgerald, Jackie and Bob Forman, Rosemary and Bill Hoffman, Beverly and Ed Kinner, Dani and Wally Kleinfeld, Linda and Vin Kochanek, Bill Maurer, Brian McManus, Marie and Roy Nersesian, Herb Siegel, Bob Skrzyznar, Martha and Harold Wrede, Donna and Jay Webb, Barbara Java, Ron Surich in absentia, and Marge and Allan Whittemore.

There was no formal speaker but we went around the room telling stories and stories. Dick and Bob Forman were lamenting that the Delta Phi house turned into a sorority house. Dan Brandel and Joanne Jensen live on an island in northern Wisconsin. They publish a weekly newspaper, the Washington Island Observer, for the island’s 600 residents. Ed Kinner and Roy Nersesian brought back memories of Navy stories; at one point Roy was the most senior ensign in the United States Navy, a memorable accomplishment. The TKEs are applying for reinstatement of their fraternity on the RPI campus after 10 years of exile (which I wasn’t aware of). They still have their house, however, and we wish them success to formally get back on campus.

Marge and Al Whittemore and I sat near each other during the 50 Year Club Luncheon and afterward attended some of the classes being held on campus. Al attended several classes: Intro to Differential Equations, Intro to Engineering Analysis, and Modeling & Analysis of Uncertainty (I also sat in on this one). Al spent his career with GM in Michigan and was disturbed with the management of the first class and copied me on a critical letter to the head of the department. His complaints included too much time handing back tests and answering questions about the grading of the exam (Does this sound familiar?), writing on the screen too small for people in the back of the room to read, and answering questions without repeating the question. The other two classes were handled very efficiently. I don’t know what if any response he got back but we should applaud his effort to improve the teaching profession at RPI.

A big thanks to Jay Webb who did the footwork to have the Class of 1961 represented at the Reunion & Homecoming. He said that the Class of 1961 had the largest class gift with a total of $817,076 with 26 percent participation. Congratulations! My apologies if I have failed to mention some classmates who were there.

Send news to: Brian McManus ’61, 2109 Hidden Creek Road, Fort Worth, TX 76107-3510; brian44@sbcglobal.net

—1962—

55th Reunion: Oct. 12-15, 2017 Several of us diehard hockey fans traveled one day in Richard Abrahams’ 1954 Oldsmobile, Genevieve, to Boston to attend an RPI versus Boston College game. Boston had just been victimized by a winter blizzard, and its side streets were piled high with plowed snow. We got lost and wound up at Harvard. In exchange for a lift home, a Northeastern University student directed us to the Boston Arena. The trip was not worth the effort; we lost! On the way back to the Massachusetts Turnpike, we got hung up on a trolley switch and had to get out and rock poor Genevieve free.

Judge Arthur Gajarsa, retired from the U.S. Court of Appeals for the Federal Circuit and recent past chairman of the Rensselaer Board, has received the 2016 John Carroll Award, the highest honor to be bestowed by the Georgetown University Alumni Association. Judge Gajarsa earned his
B.E.E. degree from RPI, an M.A. in economics from Catholic University of America, and his J.D. from Georgetown University. When asked once what J.D. stood for, my father, also holder of a J.D. degree, said, “juvenile delinquent.”

I received in the mail a letter from Jerome (Jerry) Zollier. Jerry was at the alumni gathering and Class of 2020 send-off at the home of Peter Pfeiffer ’78 in Austin, Texas. Seven new students attended, along with alumni from local tech industries and universities. Jerry said that the youngest attendee was a “cute little hyperactive baby who looked like a candidate for the Class of ’47.” Does he really think that the baby will graduate at age 32?

Send news to: Jay Winderman ’62, 1868 Bridgeport Ave., Claremont, CA 91711-2520; jbwre@earthlink.net

—1963—

This has been a landmark year for the Class of ’63...we have reached three quarters of a century on this Earth. Way back in 1963, my grandparents were still living; I couldn’t envision being 75. This gives me an opportunity to remind you to send me a note about yourselves while there stil still is a chance.

Ray Charles and his Orchestra appeared at the RPI Field House back in 1961. Tickets were $2.00 and students got a 50-cent discount. And election results had Dick Kammann and Roger Lourie elected as junior class reps to the Student Council. President Folsom in a letter to parents announced that the tuition for the 1963 academic year would be raised to $1,600. For the fall semester of 1961, we had seven classmates achieve 4.0 averages: Edgar DeMeeo, Steve Lavenberg, Roger Mestier, Marc Rich, John Tatatorinis, Wallace Wade, Mike Waller, and Phil Young.

Jim Pollack sent me a note to tell us that he finally made his final retirement at age 75. Jim was the first RPI graduate in environmental engineering. While studying for his master’s at Purdue, he met Nancy whom he has been married for 51 years. In retirement, Jim now has time to visit with his grandchildren and daughter, Jill, and son, Chuck. After his master’s in civil/environmental engineering, Jim joined Dow Chemical, managing projects in Maryland and Michigan. Moving to Dow Corning in 1972, he took charge of their pollution and environmental operations. As the corporate environment manager, Jim traveled much of the world in support of the corporation’s business operations. In 2003 he joined the faculty at the University of Houston, where, in the early 1990s, he led the team that built the first large Wi-Fi network. Contact him at dhill@cmu.edu.

And—for today’s last item—I can report that I had lunch in New Jersey with two classmates that I had not seen in over 50 years: Rick Kaplan and my freshman roommate Howie Mandelbaum. This was all arranged by my new neighbor Danny Gold (recently retired after a very long career, 48 years, with IBM). Danny and his wife, Jeanne, have joined my City College of New York-affiliated lifelong learning program, so I see them pretty regularly. Rick is well retired and living in a senior community in New Jersey, and Howie is still working as a patent attorney in White Plains, N.Y. You can reach them as follows: dannygold05@gmail.com, howzummandelbaum@levman.com, and rupak1@comcast.net.

For now, remember that our 55th is only 2-½ years away; I’ll plan to see you in Troy in October of 2019!

Send news to: Michael Wellner ’64, 25 Sutton Place South, Apt. 3-K, New York, NY 10022-2458; cpmkula64@uol.com

—1964—

Heard from Gerry Stacy who reported that he was heading out to drive from Texas to North Carolina to spend a week on the Outer Banks with his family. Then, just four days later, he was off to Alaska for 10 days to spend time with friends. In August of last year he traveled to Boston and Cape Cod, and also did a national parks trip, driving from Las Vegas back to Houston via many national parks (on my list, too). And before that he did a cruise to the Baltics, visiting Russia, Poland, and Germany. Learn more from the travellin’ man by emailing Gerry at gatency@flash.net.

Del Webster reports that his fraternity “little brother,” Tom “Bucket” Wood ’67, contacted him from his home in Eagle River, Alaska. He and Tom had a long phone conversation which was followed up with lengthy emails, including photos and notes detailing milestones in their lives post-RPI. He reports that like Tom, in addition to marriage and fatherhood, he has had an adventurous career including engineering on the Alaskan oil pipeline. Always good to hear from old RPI and fraternity friends. Del admits that as he (and all of us) ages, he takes a lot of pleasure in contacting people from his past life who were important to him. I agree that it’s always fun getting news from ’64 classmates. Get more from Del at commodore@embamail.com.

Peter Maier wrote in to say that he and his wife, Cindy, have been enjoying retirement by the pool of their condo community in Brookfield, Conn. They take care of their grandchildren twice a week. Unfortunately Peter says that he’s not been back to the ‘Tute in a long time, so he doesn’t have any real news from Troy. But you can find out more about what he has been up to by sending him a note at maierpplh@gmail.com.

Also had a nice note from Gene Tucker, who wrote in to say that most weeks he spends two or three days at his cabin (“camp”) at Kerr Lake, which is a short drive to southern Virginia from his home in Cary, N.C. There he enjoys staying active by rowing, kayaking, clearing the woods of dead trees, and burning the brush—and even making an occasional piece of furniture in his shop there. More importantly, Gene has a perfect attendance record at the 4:00 o’clock beer break with his neighbors. At home in his retirement community, he helps with the woodworking program for men in the assisted living and memory care units, and also leads a monthly gathering of independent living folks in discussions of major issues of our time. Life in North Carolina is good. Learn more from Gene at tuckerug@jma.edu.

Alex Hills tells me that in his new book, Finding Alaska’s Villages, he tells the story of how he traveled Alaska by bush plane and snow machine, braving extreme weather and rough terrain to bring telephone service to small villages across the big state. Then he developed a new public radio station to serve the people of Alaska’s huge northwest region. Later Alex worked with other Alaskans to bring about an innovation that would forever change rural Alaska. It was the introduction of the small satellite earth stations that would eventually make needed telecommunication services—two-way medical communication, a phone in every house and business, and radio and television programs—available in Alaska’s villages. It’s quite the story. Alex is now Distinguished Service Professor at Carnegie Mellon, where, in the early 1990s, he led the team that built the first large Wi-Fi network. Contact him at dlills@cmu.edu.

And—for today’s last item—I can report that I had lunch in New Jersey with two classmates that I had not seen in over 50 years: Rick Kaplan and my freshman roommate Howie Mandelbaum. This was all arranged by my new neighbor Danny Gold (recently retired after a very long career, 48 years, with IBM). Danny and his wife, Jeanne, have joined my City College of New York-affiliated lifelong learning program, so I see them pretty regularly. Rick is well retired and living in a senior community in New Jersey, and Howie is still working as a patent attorney in White Plains, N.Y. You can reach them as follows: dannygold05@gmail.com, howzummandelbaum@levman.com, and rupak1@comcast.net.

For now, remember that our 55th is only 2-½ years away; I’ll plan to see you in Troy in October of 2019!

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—1965—

John “Jock” Dyer and I accepted an invitation from the Navy to attend the commissioning of its new futuristic guided missile destroyer USS Zumwalt (DDG-1000) with our wives Jane and Linda during Baltimore’s Fleet Week in October. Jock and Jane had followed the ship’s construction at Bath Iron Works, not far from their home in South Freeport, Maine, and we decided to include the event during a weekend visit with us in Annapolis.

Philip (Phil) Rogers has joined the faculty of USC's Marshall School of Business as assistant professor of clinical data sciences and operations. After receiving his B.S. in mathematics at RPI, Phil went on to earn both an M.S. and Ph.D. in operations research from UC Berkeley, with minors in statistics and mathematical economics. He then embarked on a 33-year career at Exxon, where he developed many sophisticated mathematical models that were used to optimize a wide variety of the corporation's business operations. In 2003 he joined the faculty at the University of Houston, where he taught courses in statistics, business modeling, and decision-making and won a university-wide teaching excellence award in 2011. He subsequently taught business modeling and optimization at the W.P. Carey School of Business at Arizona State before joining USC Marshall.

Send news to: Erik Pettersen ’65, 135 Island View Drive, Annapolis, MD 21401; erik.pettersen@comcast.net
Nearly 200 classmates and guests of the Class of ’66 reconvened in Troy 50 years later to celebrate having lived through it all and now prevailing. A few canceled attendance plans last-minute for health reasons (Lew Kling, Larry Gordon, Don Cote, Amyn Sunderji, and Bill Purdy). A hurricane heading for her Florida home kept Jane Owen away. Van Thompson attended only on Saturday night after first flying to LA to accept a prestigious international professional award. Bonnie Hepburn arrived with perk but left packed in ice in a wheelchair after she was dragged by a car on her knees.

All of the above notwithstanding, Rainer Ellis summarized the experience of those of us who did attend: “Although I recognized only two people, a fraternity brother and Bonnie, I quickly began putting new names and faces together. To say that Brenda and I had a great time would be an understatement.”

Many people worked to make our Reunion successful. Our first classwide event was the Thursday class dinner. Forewarned of challenges awaiting a new visitor in locating the Troy Country Club in the dark, many of us opted for the chartered bus from our Albany hotel. What a trip it was! Our bus meandered through Troy, turned off a suburban street, descended into a darkening forest on an unpaved private road, and then came to a halt before a bridge over a gorge. Those at the front of the bus saw the heavy cable at bus-windshield height which spanned the far side of the bridge tautly. Backwards goes our bus in the dark on a hill on a curve with extremely limited visibility and two vehicles behind us.

We arrive at last, drink, schmooze, gather up our delicious dinner buffet food, and are seated. The program begins with Terry Jones as featured speaker. Three interconnected roomfuls of classmates and guests listen raptly while he checks on who had the most grandchildren (19) and marriages (max reported was three), who had come the farthest, who had changed professions the most dramatically. Juri Talva had traveled from Hawaii. Rich Bollam had changed from physics to accounting.

Next the group watches a surprised Bonnie Hepburn receive the RAA Key Award “for her work as class correspondent and on reunion planning committees and for her outreach to hundreds of classmates with a consistently positive attitude.”

After Bonnie disappears, Terry introduces a surprise guest speaker who rooms the rooms in a gold lame turban with faceted gemstone and black feather. “Carnac” came into the field of certain classmates, who, inexplicably, did not look thrilled by her approach. Carnac announced various distinctions, which may or may not have been gleaned from past class notes columns.

Gordon Snyder dashed over to our dinner after receiving the prestigious Alumni Admissions Recognition of Excellence Award. He was lauded for always stepping up, even at the last minute, and also for his positive and gracious attitude. As just one example, Gordon frequently attends college fairs, and forwards names of students who would be a good match with Rensselaer.

On Friday many of us attended the 50 Year Club Luncheon at Sage Dining Hall. The venue was crowded, food was good, camaraderie was excellent. After lunch, Mary Bridgman Williams, Rich Davison, and I struck off across campus. We had some lovely personal conversations with students who all seemed very happy to be at Rensselaer and who also wanted to talk to alumni/ae. We felt celebrated.

Receptions for architects, Class of ’66, and all alumni preceded the President’s All-Alumni Dinner. Les White describes the dinner: “An athletic arena was magically transformed. The entire area was tastefully illuminated with a subdued starlight effect.” “Elegant and beautiful” was another description. Service, cuisine, presentation were all exemplary. Groups of talented student musicians shared their musicality to everyone’s delight. A lavish dessert buffet and dancing followed. Everyone raved.

Saturday was a big day for former football player Rainer Ellis. He and three team members from ’66 participated in the pre-game show and then formed a tunnel and high-fived the players as they ran onto the field. Rainer had never won a game in his years playing for RPI, so the exciting end to the game was particularly satisfying. From a deficit of 10 points at halftime the QB threw two touchdown passes and with 20 seconds to go ran in the go-ahead and winning touchdown. Final score: 21 RPI, 17 Hobart.

RSE celebrates its 150th anniversary with events throughout the weekend. Sigma Chi welcomed returning brothers to a beautifully rehabbed house, LXA convened at a local restaurant, and Theta Chi held its well-attended dinner at a local country club. Smaller unaffiliated groups dined together less formally.

Back at the hotel, groups reconnected after scheduled events. Later that Saturday evening, a group of us spread out around a table and filled in lost years conversationally. Topics ranged from death of a spouse to dealing with a serious medical diagnosis to how to reverse the flow of gas through a pipeline in Panama and what it felt like to be shot at in Vietnam. Erik Hougland and Brant Brown were new faces at the table that night.

Thanks to members of the reunion planning committee: Rich Bollam, Dave Eckhardt, Terry Jones, Chuck Orafrik, Eric Kluz, Jeff Goss, John Caporale, Lew Kling, and Bonnie Hepburn. Rich organized our effort. Dave spearheaded class gift efforts. Arthur Golden made a matching-funds contribution which elevated us to one of the three highest 50th Reunion fundraising groups in Institute history.

Special thanks to Frank Buckman, Mike Gauthier, Amyn Sunderji, and Rich Felak for contacting classmates. Thanks to Institute employees Kaitlyn Lounsbury ’15 and Stephanie Smith, who supported us through the experience. Thanks to all the students and members of Red & White, so hospitable and inspiring.

Thanks especially to the student EMTs and Steve Browne, an EE/MBA student working at the alumni office. He stayed with our class correspondent throughout her ER ordeal. My fondest memories
50th Reunion: Oct. 12-15, 2017  Lou Jones had the honor of giving the commencement address and receiving an honorary degree at the New England School of Photography in June 2016.  

Robert Roehm of Albuquerque, N.M., has been appointed to the New Mexico Occupational Health and Safety Review Commission by the governor, Susana Martinez. He is a retired environmental and safety compliance manager from Rust Tractor/Wagner Equipment Co. and has a bachelor of civil engineering from RPI.  

John Ruckdeschel has joined the University of Mississippi Medical Center as Cancer Institute director and Ergon Chair in Cancer Research. As a clinician his career has focused on lung cancer and other thoracic malignancies. John is an avid ornithologist and served as vice president of the Red Rock Audubon Society in southern Nevada.  

Paul Sa submitted the following interesting bio: “At age 4, my family fled China just before Shanghai fell to the Communist onslaught. After short stays in Taiwan and Hong Kong, we wound up in Japan in 1950, where I lived until I was admitted to RPI in 1963. I am not sure becoming an engineer was end and, in the guise of needing help, my father took me into his shipping company. By 1977, his partners, all in their 60s, had had enough of a kid in his early 30s who did not share their conservative, shorter-term corporate strategies. Again, I landed on my feet with a contract to build and manage a fleet of bulk carriers for a fellow RPI graduate, Don Robohm. With the financial support and partnership of an older gentleman who had more money than sense, we won a five-year contract to move Jamaican bauxite for Kaiser Aluminum. That initial five-year contract was renewed seven times and afforded me a nice living until the financial world collapsed post Lehman Brothers in 2008. I managed to hang on until 2010, when it was obvious even to me that I was flushing money down a bottomless pit. I scrapped my ships, paid off as much of my debts as I could, and went into semi-retirement.  

During my 40 years as a ship owner, I was a board director of a marine insurance group, the middle 10 years as chairman. After retiring from the board in 2012, they took me in as a rowing ambassador with a small stipend and paid my travel expenses, mainly to China, where I helped with the marketing of their marine insurance. Sometime soon, I expect even that gig will end.”

Paul Irwin has kicked off the activities for the 50th class reunion coming up in two years. Paul was the editor-in-chief of the 1968 Transcript and has extra copies on hand. If you would like a copy, contact him at Pirwin@RandolphCollege.edu to make arrangements for shipping. Paul is currently the Charles A. Dana Professor of Mathematics at Randolph College in Virginia and planned to be retired from full-time teaching after the 2016 fall semester.  

Mike Bergamini wrote: “After leaving RPI, I spent three years as an infantry (a.k.a., grunt) lieutenant in the Marine Corps but missed Vietnam. After resigning my commission in 1972, I did a Ph.D. in pharmacology at Columbia University for his five years of teaching at Columbia. After finishing my undergraduate studies at RPI, I moved to Fort Worth, as vice president, glaucoma research is outside Milan, Italy, development is at Nicox S.A./Nicox Ophthalmics Inc. At Nicox, research is outside Milan, Italy, development is at Nicox S.A./Nicox Ophthalmics Inc. At Nicox,

Classmate Dan Muecke retired from his third career as pastor of Faith Lutheran Church in Colorado over the summer. He is active in the local Rotary Club as its treasurer and is the co-chair for this year’s Buena Vista Bike Fest. In addition to continuing with his Rotary activities, Dan plans to spend more time with his family and his hobbies which include woodworking. He has made several pieces of furniture for his home. The new addition Don and his wife, Betty, are putting on their home will include a woodworking shop.  

Bob Farrauto (Ph.D. Chem.) was the recipient of the Distinguished Faculty Teaching Award at Columbia University for his five years of teaching graduate and undergraduate courses. He says that he relies on his 40+ years of industrial experience to teach catalysis and environmental engineering students how to solve real-world technical problems. In addition to his teaching and lab work, Bob has written three textbooks, and is one of the co-authors of the recently published Introduction to Catalysis and Industrial Catalytic Processes.  

The brothers of Lambda Chi Alpha graduating prior to 1972 are having a reunion in Las Vegas, April 25-27. If you would like more information, contact David Burkhart at dburkhart@soc.nicom.  

Henry Scheuer is now senior director at Oppenheimer & Co. in New York City.  

Mike Bergamini wrote: “After leaving RPI, I spent three years as an infantry (a.k.a., grunt) lieutenant in the Marine Corps but missed Vietnam. After resigning my commission in 1972, I did a Ph.D. in pharmacology (CUNY’s Biomedical Sciences Doctoral Program at Mount Sinai School of Medicine). Answering an ad in the NY Times, I went to California at Allergan Pharmaceuticals to manage, first, their Ophthalmic Pharmacology section and then, their Pharmacology department, while maintaining a toehold in academia as a clinical instructor in ophthalmology at UC Irvine. I then moved to Princeton at The Liposome Co., as director of ophthalmic research, again keeping a toehold in academia as adjunct assistant professor at Jefferson Medical College. From there, on to Northern California at Sola/Barnes-Hind as vice president, R&D. Thence to Spain, as managing director of the Laboratories Cust R&D Center in Barcelona, prior to its acquisition by Alcon Laboratories Inc. Back to Fort Worth, as vice president, glaucoma development, R&D, Alcon Research Ltd., with an ongoing academic appointment as adjunct professor at the University of North Texas Health Science Center (UNTHSC) at Fort Worth. I then spent five years at UNTHSC as director, Office of Clinical Trials; executive-in-residence, Technology Transfer & Commercialization; and senior research analyst, Orthopaedic Surgery; before accepting the position of chief scientific officer/executive, R&D, Quality, Vigilance, Regulatory, & Manufacturing at Nicox S.A./Nicox Ophthalmics Inc. At Nicox, research is outside Milan, Italy, development is inland from Nice, France, and I lead a coterie of consultants, CROs, and CMOs from Fort Worth. So, you see, I became a journeyman scientist.  

“I have been first or co-inventor/author on 13 patents, 35 peer-reviewed publications, 68 abstracts, and four chapters. Though not an optometrist, I am a fellow of the American Academy of Optometry, a member of several scientific societies, and an expert reviewer for the NIH’s National Center for Advancing Translational Sciences.  

After a number of false starts, I married the love of my life, Harli Dollinger, Ph.D. I/we have three children, Sam, John (Jack), and Nicole, of whom I am very proud!”

“He had asked me what I wanted to do with my life and I had said I wanted to be a writer. They were horrified and told me in no uncertain terms to find a career that can actually pay bills. Thanks to the forgiving gods, I expect even that gig will end.” —BONNIE HEPBURN '66

“We had some lovely personal conversations with students who all seemed very happy to be at Rensselaer and who also wanted to talk to alumni/ae. We felt celebrated.” —BONNIE HEPBURN '66
“Besides my relationship with my wife and children, my other accomplishments include my roles in the development of a dozen drugs and several medical devices that help people see better, cycling my age or more the past few years, running four marathons, hiking Half Dome five times, turning a farm milking shed into a one-BR house, finishing as the top infantry officer at The Basic School in Quantico and 1st in 3rdMarDiv Oreinteen on Okinawa, and bringing RPI’s Troy Tutoring Project down into the ghetto (the one they subsequently put the freeway through).”

Send news to: Henry Scheuer ’69, P.O. Box 535, Madison Square Station, New York, NY 10159-0535; hscheuer@janney.com

—1970—

Sorry for not having a submission for our last class notes. I think that spurred a few people to submit.

Len Simoni received his M.S. in math from RPI in 1970 after receiving his B.S. degree in chemical engineering from UConn in 1965. He fondly remembers his graduate advisor, Professor Murray Spiegel, as a remarkable teacher and person.

Len retired from Westinghouse Electric Co. in 2014. His career included work for Combustion Engineering and United Technologies, all in the Hartford, Conn., area. Len is currently performing consulting engineering services.

Wayne Coleman has always been a lover of all things baseball, from serving as bat boy for the Springfield Giants of the Eastern League in 1963, to becoming a “superfan” of the Atlanta Braves, his hometown since 1978. As a member of the 3000 Home Game Attendee Club, he has served as six-term president of the Braves Fan Club and was Atlanta’s Mr. Baseball award winner in 2014.

This past year was very special as the Braves gave tribute to their final season at Turner Field. Wayne had one of 81 celebrities, former players, and fans selected to take part in the countdown. Wayne had the honor of pulling down #62 in the countdown to the 81st and last home game at Turner Field.

I have heard on Facebook from Dave Bivans, Howard Green, Otto Zamek, Bill Palmer, Sue Stevens Larsen, Mike Kramer, Charles Wilson, Andreas Antoniou, Dave Hamby, Tom Myers, Dave Kerlick, Gordy Benoit, Gerard Brown-Manrique, Steve Shashoke, Warren Silverstein, Chuck Rancourt, Scott Starch, and Joshua Kardon and many others from our surrounding classes. I will FB message my “friends” and ask if there is anything that they would like to contribute to our next Class of ’70 notes.

Just a closing reflection. When John Cimino ’71 contacted me about the death of our VP of Student Affairs Byron Evans, all I could think about was what a great advocate he was for us as we went through the Vietnam era. He was a man of integrity who cared for us as students and young adults.

Send news to: Rick Hartt ’70, 192 North Lake Avenue, Troy, NY 12180-6518; hartrtm@aol.com

—1971—

Jorge Goldstein (Chem.) has recently published a book, U.S. Biotechnology Patent Law, which describes case law dealing with patents in modern biotechnology. After graduating from RPI, Jorge went on for a Ph.D. in chemistry at Harvard, and a J.D. from George Washington University. He is currently a firm director at Sterne, Kessler, Goldstein & Fox in Washington, D.C.

I took part in the National Masters Outdoor Track and Field Championships, July 14-16, held in Grand Rapids, Mich. I finished third in the 5000 meters (21:41) and second in the 10,000 meters (44:51) in the M65-69 age group.

By the time you read this, our 45th Reunion will have concluded, and I’m sure all who attended had a great time.

Send news to: Seth Bergmann ’71, 410 Villanova Road, Glassboro, NJ 08028-1558; bergmann@novan.edu

—1972—

45th Reunion: Oct. 12-15, 2017 Send news to: Bob Dvorak ’72, 12 Mill Lane, Saugerties, NY 12477-1128; bbdvorak@hvcnr.com

—1973—

We received a nice note from David Heal, who hasn’t submitted an update in about 20 years or so, so he gets top billing. David writes: “After working for over 40 years as an airport manager/aviation consultant/company pilot, I retired in 2014. I am now living the good life in Northern California’s beautiful wine country with my Texan bride (Texas A&M ’78) of 29 years. Our daughter is currently working on her Ph.D. in applied mathematicst at Harvard (very proud parents!). My retirement interests include regularly flying the two-seat RV-12 ELSA light airplane that I built in my garage. We visited the KPI campus and ‘The Big City’ (Troy) last fall—my, some things have changed...and some remained the same. I miss computer data card sorting at midnight in the Amos Eaton Hall Basement...”

Well, David, we all miss filing and refiling our For- tran decks at midnight! Amazing what we remember from our days at the ‘tute. But congrats on a successful career and promising retirement. Send some wine samples with your next letter.

In other news, we heard via the Waynesburg (Pa.) Observer-Reporter that Miles Davin’s 1966 unbeaten high school football team was honored last September. Miles played on our illustrious RPI football team, which decidedly did not go unbeaten in any of our years there. Apparently, Miles is back in Waynesburg running M. Davin Surveying and watching some top-notch Western Pennsylvania high school football.

As always, please check in with our class website, www.rpi73.org, and post a comment or two. We are interested in what you are up to these days.

Send news to: Gary DiCamillo ’73, 477 Wannano Avenue, Osterville, MA 02655-1924; gary dicanollo@gmail.com

—1974—

Although I am now officially a resident of Florida, the hot and humid summers have caused me to flee back to New Mexico where I can enjoy cool, dry evenings all summer long. I usually drive between the two states and would love to meet up with any classmates along the way. Send me an email and we can try to get together in the spring when I head out or in the fall when I come back.

Last summer, I heard from Rick Kacich who now serves as deputy director for DOE’s Los Alamos National Laboratory (LANL) after spending several years out in Richland, Wash., managing their nuclear waste treatment/remediation for the Hanford facility.

Rick has been working for Bechtel for the last 10 years following various management positions for Northeast Utilities (now Eversource Energy), Yankee Atomic Energy, and Seabrook Nuclear Power Station. Now Rick faces his greatest challenge ever because my son, James Jr., also works for LANL! He tells me both his daughters are still single and living in the NYC/rural MA area.

Do you remember Bill Owens? Bill was in Hall Hall and shared a room with Rick Hahn. He sent me a “hello” via LinkedIn. He is working as a consultant to various nonprofits in the Denver area focusing on solar power, among other ventures.

Duane Covino wrote me about his trip to Spain during the summer which went well. He toured places such as Santander, Bilbao, Pamplona, Barcelona, Granada (and the Alhambra), Costa del Sol, Malaga, Gibraltar, Seville, and Madrid. In the same vein, Ruth and I toured the Baltic Countries (Latvia, Lithuania, Estonia), Russia (St. Petersburg and Moscow), Romania, Bulgaria, and Greece. One day Duane and I will meet up in an international airport. I also corresponded with Claudia Seligman down in Louisiana. They got pounded by rainstorms during the summer (not a hurricane, just heavy rain) which caused extensive flooding. Fortunately she, and her bionic body, came through it OK.

Send news to: James C. Wernicke, P.E. ’74, 5485 David Blvd., Port Charlotte, FL 33981; wernickejc@yahoo.com

—1975—

Greetings to the Class of 1975! Christopher Gaylo (Mech.E.) is now the director of the Advanced Technology Center at Northampton Community College in Bethlehem, Pa. He is leading innovations and renovations at the college’s technology center. Chris currently has 15 patents in his name, and can proudly claim that a robot he once worked on has been featured on Sesame Street (it is shown spraying materials to be used in the internal parts of jet turbine engines).

Maureen and I enjoyed a two-week vacation
around Ireland in October. While there, I represented RPI several times with my Reunion fleece vest and an RPI polo, as shown in the photo from our Ring of Kerry Tour!

Send news to: David Stark ’75, 616 Sandray Terrace, Bel Air, MD 21015; dcstark@hotmail.com

—1976—

Send news to: Michael Mino ’76, 110 Merrifield Court, Greenville, SC 29615-3414; mmano@propertyboss.com

—1977—

40th Reunion: Oct. 12-15, 2017 It’s always super fun when I get a note from a former classmate—especially when I find they are nearby! Remember, if you are reading this, you need to write me a short note. Tell me where you are living, what you miss most about college days, how many children and grandchildren you have, and what part of the world that you have seen is your favorite.

This note is from Wayne Roberts, who is chief of flight operations, Air Mobility Programs, in LM Aero, Marietta, Ga. “A few weeks ago I was reading the RPI alumni magazine as I have been occasionally for the last 39 years. I have never sent in any notes like nearly everyone else, and seldom see anyone I know mentioned. The last time I was back to RPI was likely 1980. I keep in touch with friends who have kept a tradition, now 41 years long, of a pot luck dinner the week before Thanksgiving. We started it in our College Ave. apartment (long torn down) sophomore year. Atlanta is a bit far for the crowd so I have not had a chance to host it yet. Anyway, your post mentioned that a classmate came to Georgia. That one phrase got me to look at your address. Because Cumming is not that far away, I checked your address on Google Earth. My wife and I bought a house directly across the lake in December. We are slowly remodeling it and slowly moving from our house in Marietta. Anyway, look forward to sharing the rest of our stories soon. We do not have a boat yet but bet you do. You could be our first visitor by boat!”

And this note from Bill Gordon: “As I visited campus this past October, I was reminded that we’re now officially less than one year until our 40th Reunion. It’s hard to believe it’s been five years since listening to Monolith in Mother’s with the Genny Cream Ale!

“As for me, I’m continuing to run Dix Hills Partners, the ‘hedge fund’ I co-founded 13 years ago. As global interest rate specialists, I’m looking forward to a resurgence in concern for interest rate concerns, and those institutions and investors that are interest rate sensitive to seek out our advice. We’ve also been speaking to several large institutions about partnering to accelerate our growth globally, and a last step before Vicky and I consider slowing down.

“This past year both Vicky and I have been focusing more of our attention to our house on the North Fork of Long Island located in the midst of one of the more exciting wine areas in the U.S. If we’re not out wine tasting at one of the over 50 vineyards in the area, we’re on our boat, heading out to one of our favorite sand holes around Shelter Island for a day on the water.

“My daughter has now been in the Latin American Marine Division of Swiss Reinsurance for five years, which has her traveling regularly to South America for client activity. During her spare time, she is an active member at Noroton Yacht Club and is on a J-boat sailing team which sails in regattas around the U.S. My son Christian runs Long Island Boat Rentals, our family business, on Long Island, renting power boats and chartering power and sailing yachts that can regularly be found entertaining clients at the Statue of Liberty and New York Harbor.

“This summer he made his first TV commercial in the middle of catering to well-known entertainers and business people.

“In preparation for our 40th, and to generate some buzz before the event, I have begun posting photos of the campus today on our Facebook site, RPI Class of 1977. If you’re a Facebook user, please like the site and follow us on our march to the 40th next year. If you’re not, stay in touch with Maureen Robinson as we begin to gather updates, revisit fond memories, and catch up with all our classmates. And make sure you save the date for the 40th Reunion on October 12-15, 2017.

Send news to: Maureen H. Regan Robinson ’77, 5015 Young Deer Drive, Cumming, GA 30041; maureen7221@aol.com

—1978—

More news from our classmates! Joe Moran writes that he retired last year from Boeing/Donnell Douglas after 37 years with the company and is now free to travel extensively. In Jan/Feb 2016, Joe and his husband, Richard, sailed to Antarctica on Crystal Symphony, starting in Buenos Aires, down to Antarctica, then up the western coast of South America, through the Panama Canal, ending in Miami. They followed this trip below the Antarctic Circle with a cruise above the Arctic Circle. In August they sailed on Crystal Serenity through the Northwest Passage (historic first time that a cruise ship of this size made the journey). The cruise started in Anchorage, then sailed north of Alaska, through the Canadian High Arctic, continuing on to Greenland, ending in New York City. Highlights of the two cruises include: icebergs surrounding both ships, flying over the Nazca lines in Peru, being up close to penguins in the Antarctic, and pretty close to polar bears in the Arctic, along with seeing the amazing northern lights sailing in the Labrador Sea.

Elizabeth Malko was named chief medical officer for New York-based MVP Health Care, which offers health insurance plans in New York and Vermont. Elizabeth recently was with Evolent Health in Arlington, Va. Before this, she was with Fallon Community Health Plan in Worcester, Mass, and Wellpoint (now Anthem). In addition, she was a family physician and chief engineer of several environmental engineering firms.

Gary Moynihan received the Fellow Award from the Institute of Industrial and Systems Engineers (IISE). Gary is a professor at the University of Alabama (UA) College of Engineering in Tuscaloosa, Ala. He is involved in the construction engineering and architectural engineering programs at UA. He co-founded and serves as assistant director for the Alabama Industrial Assessment Center, funded by the U.S. Department of Energy, to assist manufacturing facilities in energy cost reduction, productivity improvement, waste minimization, and pollution prevention. Prior to joining UA, Gary was with Martin Marietta Orlando Aerospace as a manufacturing engineer, industrial engineer, and systems analyst.

And with news a bit closer to RPI, Ken Bubeck recently hosted a ribbon-cutting ceremony at the new offices of Ithos Global in Troy, NY. Ken is co-owner and founder of Ithos Global, which provides regulatory compliance software to companies in the cosmetic, chemical, food, and health-related fields. A 50 percent growth in their business since the startup in 2008 and the accompanying additional personnel (including 12 RPI interns) required the move from their former offices on River Street in Troy.

As always, I look forward to your news and items of interest.

Send news to: Mark Keough ’78, 4 Longview Drive, East Granby, CT 06026-9797; mark.keough@cox.net

—1979—

Mike McCabe was sighted in Greenland and the Cumberland Sound of Canada’s Baffin Island. “The original goal was to go to Pangnirtung (population 1,475). But the Cumberland Sound was filled with ice so the stop in Pang had to be aborted. We were planning to end in Kuyjuaq but alas, the ice in Ungava Bay was too much so we went to Iqaluit instead.” Sure sounds different than Port Moresby, Papua New Guinea, where Mike was also recently sighted.

Richard Rappa, senior vice president for CHA Consulting of Albany, received the Energy Engineer of the Year award for the Northeast region from the Association of Energy Engineers. For over 18 years he has led CHA’s work for utility and state-based energy efficiency programs.

Send news to: Paul Sicard ’79, 1424 Kenilworth Parkway, Baton Rouge, LA 70808-5737; pacsic@energy.com

—1980—

Steve Tice is co-founder and CEO/COO of EVDrive, which develops high performance elec-
Continuing Rensselaer’s Panama Canal Legacy

On June 26, 2016, Robert Bright ’82 attended the inauguration of the expanded Panama Canal, bringing full circle a legacy of involvement by Rensselaer alumni with the historic project.

Bright, a mechanical engineering graduate, is founder and CEO of Talson Solutions, LLC, a construction auditing, consulting services, and project management firm that played a significant role in the eight-year, $5.2 billion expansion of the canal. The expansion has doubled the shipping channel’s tonnage capacity, making way for massive modern-day cargo ships, and has reduced travel time for vessels crossing between the Atlantic and Pacific oceans.

“This is a project that impacts not just one city, one country; it impacts the world,” Bright told the Philadelphia Inquirer in August.

Talson provided auditing and consulting services for the Third Set of Locks project to the Panama Canal Authority. As construction auditors, Talson was involved in every facet of the project, including financial controls, reporting, quality audits, and subcontractor management— involving companies from more than a dozen countries around the world—as well as concrete production in excess of 4.5 million cubic meters required for the project.

This signature project has led to an expansion of Bright’s 15-year-old firm which, with 24 employees, has grown from a small office in Philadelphia to include offices in New York, Atlanta, and Panama City, Panama. Rensselaer involvement with the Panama Canal dates to its origins. In 1907 President Theodore Roosevelt appointed Harry H. Rousseau, Class of 1891, to the Isthmian Canal Commission; he became a leader in the construction and early management of the Panama Canal.

—1983—

James Leckinger’s article on little-known musical instrument maker Carl Albinus Johnson was published in the February 2017 issue of Vintage Guitar magazine.

Send news to: Don Hubicki ’83, 2955 Hunt Valley Drive, Glenwood, MD 21738; hubickidoni@gmail.com

—1984—

We have a very brief update this round. Chris Nelson is still living in Clifton Park but has changed jobs to become a solutions architect at Appenda. If you read the Spring 2016 edition of the alumni magazine, Appenda was a featured company.

I figure everyone else is busy planning retirement or at the other extreme, working long hours to pay college tuition for their youngsters. Either way, let me know what you are doing.

Send news to: Diane Udegrove ’84, 3002 Colonial Ridge Drive, Brandon, FL 33511; kupde@sbcglobal.net

—1985—

If you attended Homecoming, I hope you had a fabulous time reconnecting with your RPI friends. Congratulations to Christine Murner (MechE) who, in July, was named first vice president of sales...
The Rensselaer Alumni Association awarded Demers Medals to, from left, Jeff Schanz, assistant vice president for alumni relations and RAA executive director, Raul Lopez-Palm, M.S., ’77, and Roger Grice, Ph.D.’87, at the RAA’s 30th Annual Awards Dinner Oct. 6. The Demers Medal is the second highest award that the RAA bestows and was established in 1942 to recognize substantial contributions to the welfare of the Institute and to stimulate further interest in the support of Rensselaer.

30th Reunion: Oct. 12-15, 2017. Send news to: Peter Quinones ’87, 30 Marie Heights, West Sand Lake, NY 12196; pquinones1@yahoo.com

30th Reunion: Oct. 1987—

Katrin Wesner (M.S.) received her Ed.D. from the University of North Carolina Wilmington. Her dissertation was titled “Faculty Readiness for Emergency Response: A Case Study.” Katrin is director of the Student Health Center at UNCW and president of the Southern College Health Association.

Seth Collins has been promoted to managing director of Martinwolf[M&A Advisors. He heads the company’s new office in New York City. Seth had joined the company in 2013 with more than 20 years of experience in the IT industry. Seth has also been on the boards of two public companies.

John Petralia was named chief marketing officer at Aligned Energy, where he leads marketing, communications, and product management strategy over their four divisions. Prior to this John was global head of marketing at Bloomberg LP.

Congratulations to all of you!

Send news to: Joseph Hom ’89, 342 Westchester Ave 31E, Port Chester, NY 10573; johom@flash.net

—1989—

Hello again, Class of 1992! Alberto Gross (Comp Sci) and I caught up over several emails. Al moved back to Miami from Tokyo in 2009 and since then has been a regular at Homecoming to catch up with his RPI football teammates. Al is also a writer, having self-published the novel With This Last Thought, available on Amazon. Well-done, and great to hear from you, Al!

I heard from Rick Umali, who in turn had reached out to and heard from Maja Bystrom ’91. As for Maja, after a stint in academia, she is becoming a serial entrepreneur. She lives in Watertown, Mass., and her latest company is Bevara Technologies, which focuses on digital data preservation and access. Rick recalled that Maja was a stellar student who received her doctorate at RPI. “In 2008, I learned that she was a professor at Boston University, and I dropped her an email. She was then beginning her transition out of academics. It looks like she’s succeeded!”

Rick says he is still doing his programming thing at FirstFuel (Lexington, Mass.). “The book that I wrote to you about in 2015 is now published, which I’m pretty happy about. And on the home front: My daughter is now a sophomore in high school. Jenn and I are both looking forward to and dreading the empty nest.”

Ret. Army Lt. Gen. Michael Linnington (M.S. AppMath), whose decorated, 35-year career included tours in Iraq and Afghanistan, was named CEO of The Wounded Warrior Project last July. Thank you for your service to the United States, Mike, and best wishes to you as you take the helm at WWP.

Colonel Emil Fiklorn (B.S. Aeron) assumed command of the Eastern Air Defense Sector, an area of responsibility encompassing the eastern half of the United States. Emil most recently served as

and marketing at the ETM Manufacturing Co. of Littleton, Mass. ETM is a provider of specialized sheet-metal fabrication. With more than 30 years experience in this market sector, Christine works with clients developing unique need-based solutions while expanding opportunities to accelerate growth in her company’s core markets.

Last November, MEARS Technologies Inc. appointed Scott Bibaud (Biomed) as its chief executive officer as well as a member of the company’s board of directors. MEARS Technologies is a U.S.-based engineered materials company developing and commercializing products based upon producing breakthrough material designs providing engineered materials that will form the core of a new generation of electronic devices. Scott is a semiconductor industry veteran who has run numerous high-growth firms. Congratulations!

Are you looking to expand your team or network with other RPI alumni? See how Rensselaer Alumni Connect, at RensselaerAlumniConnect.com, a new career and professional development program launched by the Rensselaer Alumni Association and Office of Alumni Relations, may assist you.

Please continue to send me your updates!

Send news to: Patricia DeLauri ’85, 478 Winthrop Street, Medford, MA 02155; pdelauri@sbu.com

—1986—

Robert Oberle is the founder and CTO of Allenstown, Pennsylvania-based Vizinez RFID, an industry leader in manufacturing radio frequency identification (RFID) tags used to track high-value assets such as medical devices, rental equipment, and weapons. Dr. Oberle is responsible for the design and development of Vizinez RFID’s products and processes to meet the needs of its diverse customer base. As a result of his inventions, the company has been awarded 20 U.S. and numerous foreign patents, along with several pending applications. Read more about his company at www.vizinexrfid.com.

Anthony Szema, M.D., is CEO of RDS2 Solutions, an early stage pharmaceutical company and winner of StartUpAurora New York City 2016. Dr. Szema has co-invented a drug to cure pulmonary fibrosis or lung scarring. The company is named after his first mentor, the late RPI Professor Robert E. Dutton Jr., M.D., and his last scientific mentor who was introduced by Dr. Dutton: Sami Said, M.D., who discovered vasoactive intestinal peptide or VIP, which is the key ingredient in the drug.

Send news to: Jane LaGoy ’86, 28 Nashua Road, Pepperell, MA 01463; 734tantalum@gmail.com

—1987—

Hello, Class of 1988! I’ve had an interesting year, topped off with a fabulous trip to explore the Galapagos Islands and Peru, including the amazing Machu Picchu. I highly recommend that you consider going! Here’s some news from our classmates:

Greg Redington (B.S. CE), president of REDCOM Design & Construction LLC, announced the opening of their new corporate headquarters in a former car dealership in Westfield, N.J. Its 9,575 square feet of total floor space includes a mezzanine and outdoor piazza. Michele Modestino ’91 (B.S., BAR) was the project architect. With 80 employees in three locations (Westfield, N.J., Floral Park, N.Y., and Manhattan), REDCOM has become the go-to design-build contractor in the tri-state area, specializing in commercial projects such as auto dealerships, private schools, warehouses, industrial facilities, places of worship, mixed-used/retail centers and breweries.

Robert Mourao (B.S. & M.E. EE) is a principal in the Advisory Services practice of Ernst & Young, LLP. Her experience spans the government sector and commercial industry in the areas of business process improvement, enterprise transformation, and strategy and supply chain operations. She started her career at General Electric, where she became part of Jack Welch’s legendary “workout initiative” before becoming a partner with Accenture Federal Services, where she led management consulting for human services clients.

Send news to: Grace Vitagliano Roth ’88, 917 Fanwood Avenue, Westfield, NJ 07090; grace@abcworldvacations.com

—1988—

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commander of the 224th Air Defense Group and has been deployed to Saudi Arabia, Panama, the Bahamas, and Colombia.

Bianca (Haspel-Habif) (B.S., Math) and Paul Mancinelli (B.S., Physics) wrote in to say that their son, Dante, is starting to look at colleges and is definitely interested in RPI. Their eldest daughter, Chiara, is a chemistry major in her sophomore year at RPI and is already doing research in the chemistry department, gaining valuable insight into what a “real job” in her field of interest might be.

One of the things Bianca and Paul love about RPI is that for those interested in doing research, one can find an interesting, challenging, and valuable research experience (i.e. not cleaning rocks in the geology department, or fetching coffee), regardless of your year of study, noting that many colleges reserve research for juniors and seniors, and some even reserve it exclusively for graduate students. Finally, they wished to add a big shout-out to their friends John Thompson, Alex Brockmann, and Tabby Wright, all RPI alums and close friends!

Roommate and wedding best man A.J. Leale (B.S., MechE) has gotten engaged and (going out on a limb here) should be married by the time this is published. If you missed it, a church ceremony is planned for June 2017.

As for Dianne and me, we are “dating again” now that both kids are off at university. We’ve enjoyed trips along the Washington State wine trail and through the Texas Hill Country while sampling Houston’s restaurant scene on our weekends at home. If you find yourself in the Houston area, please do let us know.

Send news to: Rob Sherman ’90, 5927 Hawthorne Garden Way, Katy, TX 77494; robsherman@hotmail.com

—1991—

Send news to: Richard Vehlow ’91, 10 Catherine Place, Latham, NY 12110, rv@1996gmail.com

—1992—

25th Reunion: Oct. 12-15, 2017 Send news to: John Trammell ’92, c/o Class Notes, RPI, 1000 Troy Building, Troy, NY 12180; johntrammell@gmail.com

—1993—

The Institution of Chemical Engineers awarded the Hanson Medal to Peter Gostomski for his thought-provoking article published in The Chemical Engineer. Gostomski, head of chemical engineering at the University of Canterbury, New Zealand, received the medal at Chemeica 2016, the biggest chemical engineering conference in Australia.

Anne McEntee has been with General Electric for 16 years, now serving as the chief executive of GE’s renewable energy business, a field that includes a growing number of women. In an interview with the Albany Times Union last year, she expressed that the Women’s Network has helped attract and retain female talent for GE. Having role models like Professor Joyce McLaughlin at RPI encouraged Anne and let her see that women can be very successful in STEM. Anne did her undergraduate and doctoral work entirely at RPI. Now at GE, she is reaching out to schools by doing a big kid wind project.

Send news to: Ileana Gonzalez ’93, 68 Stormy Oak Drive, Newman, GA 30640; William.Wheeler@yahoo.com

—1994—

Please keep the updates coming. Michael Enrique Rodriguez and Rachel Wadsworth (Wellesley ’98) were married July 2, 2016, at Miner’s Foundry in Nevada City, Calif., with seven Phi Kappa Theta alumni in attendance: Malik Coates, Scott Nogueira ’86, Anand Samanta ’02, Eric Gaus ’94, Michael Enrique Rodriguez, Chris Minerva ’92, and Jean-Paul Monteau ’93.

Michael O’Hanlon was named by Wayfair Inc. as their vice president of government and industrial relations. Robert Feller was highlighted in The Best Lawyers in America 2017. Colleen Morrissey received Internet2 2016 Technology Exchange Gender Diversity Award as a senior network engineer at RPI.

Jonathan Couch joined ThreatQuotient as vice president of strategy. Keith Landry, assistant dean at Georgia Southern University, was named an ASCE Fellow. Michael Garceau joined Hamilton USA as chief operating officer. I was promoted to the rank of Navy captain and selected for my 6th Navy Reserve unit command.

Send news to: Michael Van Poots ’95, 133 The Tee, Harrisonburg, VA 22802; Michael@vanpoots.com

—1996—

It looks like turnout was light for our 20th Reunion. In attendance were Timothy Dominick, David Faux, Vanessa Ferrari, Jonna Gerken, Thomas Gitzinger, Erin Johnson, Scan Kennedy, Steven Lee, Eric Mastromarchi, Stephen Mooradian, Aren Paster, Darcy Santimaw, Ana Santos Gitzinger, Hillel Sims, Michelle Temple, Jacqueline Trojan, and Damon Wagner. I know that many (myself included) had family commitments or other obligations that weekend. Hopefully we’ll have a larger turnout in five years for our 25th.

Jonna Gerken wrote in with some exciting news. She is the new president-elect of the Society of Women Engineers. She is the fourth RPI alum to hold the position. Also, Jonna was honored to receive the Petal Foundation Women in Science Leadership Award presented by the Connecticut Science Center. The award was presented on April 26 and recognizes a woman in the sciences who displays exceptional leadership in promoting interest and participation of women and girls in the STEM fields. Jonna is a project manager for the operations development organization at Pratt & Whitney where she coordinates the startup of new OEM facilities for production ramp-up of next generation product family programs. Congratulations on your position as president-elect of SWE and on the Science Leadership Award.

Jamie Burts retired from the U.S. Navy on July 1 after serving 20 years. Congratulations, Jamie, and thank you for your service! In his post-retirement life, Jamie is working with IT services com-

The Rensselaer Society of Engineers celebrated their 150th anniversary during Reunion & Homecoming weekend in October. Almost 200 alumni, from classes ranging from 1950 to 2016 and representing more than 25 percent of all living RSE alumni, returned. “This was an RSE weekend for the ages,” said Tom Keating ’75. “Our Sesquicentennial Committee, led by Charlie Adkins ’94 and Eric John ’95, did a truly fantastic job.”
company Agile Defense as the program manager for a data sharing system used by the National Guard Bureau. The celebration continued into the night with Jamie and his husband Jason Burkett hosting their big wedding celebration that night as well, commemorating their marriage which took place last September. It was a great mini-reunion with fellow Lambda Chi Alpha alumni Mike Nifontoff, Ron Lewkiewicz, Dave Carlson, Kurt Fritzsche, Jamie Gateau, Todd Gordon ’99, and Adam Heroux ’99 all in attendance. Congratulations on retirement and your marriage, Jamie!

Margaret Kilpatrick was promoted to associate principal of the Providence, R.I., office of GZA, an environmental and geotechnical consulting firm. She has a professional engineer’s license and is active in multiple organizations, including the Small Business Association of New England, and is vice president of the board of the Rhode Island Society of Environmental Professionals.

Please keep the updates coming. And mark your calendars now for our 25th Reunion in 2021.

Send news to: Hank Carbone ’96, 8595 Kinro Lane N, Stillwater, MN 55082; hcarbone@hotmail.com

—1997—

20th Reunion: Oct. 12-15, 2017 Greetings, everyone! No one sent in news this quarter, but luckily the good folks at RPI were able to dig up a little bit for us. Fred Higgs III (M.S. ’97, Ph.D. ’01) has been named faculty director of the Race Center for Engineering Leadership. His research focuses on tribology, the study of interacting surfaces and the associated friction, lubrication, and wear. Perhaps some of our children will get to study under Prof. Higgs someday!

And another M.S. from ’97, John Mocny, has been named CEO of Bandit Industries, a family-owned manufacturer of wood chippers, grinders, and waste processing equipment in Michigan. Congratulations to both of you!

Send news to: Kristen Fitzpatrick ’97, 57 Union Street, Watertown, MA 02472; kf Fitzpatrick@mha.2003.hhs.edu

—1998—

Greetings! I hope this finds you well. It was good to hear from some of you over the last few months.

Brad Crain and his family returned to the U.S. in 2015 after three years in Naples, Italy, where Brad served the North Atlantic Treaty Organization for the U.S. Navy. Currently, Brad is executive officer for helicopter squadron HSM-48 in Mayport, Fla. He anticipates taking command in late 2016 or early 2017.

Congratulations to Erik Metzger, who married Diann Banasak (Mount St. Joseph University) in Hoboken, N.J., last May. Several of Erik’s Lambda Chi Alpha brothers were present at the wedding, including best man David Brauneis ’97, David Feinberg ’96, Ian Hamilton ’94, Steven Lee ’96, Kamlesh Patel ’90, Jason Smith ’92, and Jason Wright ’00. The couple resides in New York, N.Y.

Kevin Knight is the author of Liberation is Imperative, available from Amazon. Bettyjo Bouchev received her Ed.D. in higher education administration from Northeastern University in April of 2016. Cooper Tire & Rubber Co. named Bryan Hesse VP of marketing for North America Tire Operations. Bryan is responsible for all aspects of Cooper’s marketing programs in the U.S. and Canada.

Alicia Boler-Davis was named executive vice president, Global Manufacturing, for General Motors last June. Most recently, she was senior vice president, Global Connected Customer Experience, leading GM’s connected customer activities, including OnStar. In her new role, she reports to GM chairman and CEO Mary Barra and leads 180,000 employees at 171 GM facilities.

Esteban Santos was appointed executive vice president, operations, for Amgen. He is responsible for manufacturing, process development, quality, engineering, and global supply chain.

Send news to: Mike Johnson ’98, 116 Carlin Ave., Port Allegany, PA 16743; mjohnson@alum.rpi.edu

—1999—

Matt DiGeronimo recently published a book that he co-authored titled, Extreme Operational Excellence: Applying the Culture of the U.S. Nuclear Submarine to Your Organization. He wrote: “The author, Bob Koonce, and I both retired from the U.S. Navy and this book attempts to describe the unique, secretive, and ultra-successful culture of the U.S. Nuclear Submarine force and how organizations can implement elements of that culture.”

Steve DePascale wrote: “I am proud to announce that the Traffic Aware Planner software, developed under contract for NASA Langley by our team in Billerica, Mass., co-won the 2016 NASA Software of the Year for 2016.”

Send news to: Erica Kulesza ’99, 161 West Kinzie, Apt. 1110, Chicago, IL 60654; erica.kulesza@yahoo.com

—2000—


Send news to: Bridget Olson ’00, 1505 Monroe St. NE, Washington, DC 20017; Bridget@alum.rpi.edu

—2001—

Send news to: Mike Cooke ’01, 906 Lake Shore Ranch Drive, Saffier, FL 33584; themikecooke@yahoo.com

—2002—

15th Reunion: Oct. 12-15, 2017 Kim Oliver, a graduate of the MBA program, was nominated as the City of Hartford’s director for the Department of Families, Children, Youth, and Recreation by Hartford’s mayor this past summer. Kim has also served in other leadership positions for youth and workforce development programs.

Jennifer Keyes was named executive officer in the Office of Human Capital Management (OHCM) at NASA Langley in December. In this new role she directly supports the OHCM director and deputy director working across all OHCM functional areas which include human resources, strategic workforce planning, education, training, administrative services, and exchange.

Chris Lopinto, a B.S. IT grad, operates a unique service to air travelers that he started building while attending RPI. Called ExpertFlyer (www.expertflyer.com), it provides a way for frequent flyers to maximize their rewards and travelers to find the best values. He runs the company as the president and is currently incorporating data from new airlines as well as linking up with major travel sites.

Send news to: Elizabeth Trawinski Aitken ’02, 921 S. 8th Ave. #700, Pocatello, ID 83209; ejello@alum.rpi.edu

—2003—

Welcome to the RPI Class of 2020, now embarked on your second semester! I hope all of your dreams that you had when you were in high school come true. You enter into a school with a history of changing the world, and a history of an active alumni base. It is my hope that you become productive members of the Rensselaer community while in college, and even more productive members as alumni. Now, on to the Class of 2003...

Jamil Valliani (CSCI, CSYS) was promoted to partner at Microsoft, where he leads product teams in the U.S. and China working on Microsoft’s Search team. He is most known as the product leader for Bing Image Search, Video Search, and Home Page. These experiences touch over 100M users and billions of searches every month. Jamil enjoys traveling around the world and is an active volunteer in the Seattle community.

Send news to: Ed DerGurabian ’03, 37 Clifford Road, Menands, NY 12204; edguree@alum.rpi.edu

—2004—

Adam McFarland’s company, Pure Adapt Inc., was named to the 2016 Inc. 5000, a list of the fastest growing private companies in the U.S. (They made the Inc. list in 2015 as well.) They were also named recently to the Albany Business Review list of fastest growing companies in the Capital Region.

Adam writes: “We started the company in 2006. My business partners and I all attended Colonie High together. One of them went on to SUNY Albany, and the other went to Siena and then Union grad school. Our primary business is the e-commerce site DetailedImage.com. We’ve developed the e-commerce platform and back-end software entirely in-house. We operate from our warehouse in Guilderland Center and currently have...”
six employees (three full time, three part time). Our website has more info about us, at www.PureAdapt.com.”

Many thanks to Tom Reale, who is stepping down as class correspondent. If you are interested in writing the class notes, contact Meg Gallien, alumni news editor, at gallim@rpi.edu.

Send news to: Class Notes, RPI, 1000 Troy Building, Troy, NY 12180; gallim@rpi.edu

—2005—

Send news to: Shannon Hitchcock Schantz ’05, 7715 Park Avenue, Lowville, NY 13367; smhitchcock@gmail.com

—2006—

Massachusetts-based A.J. Tibbetts and his wife, Jenna, welcomed their second son, Callan James (Cal), on July 15. Congratulations to the family!

Send news to: Meghan Kate ’06, 11 Nicholas Road, Deerfield, NH 03037; RPI06news@gmail.com

—2007—


Send news to: Alex Salinsky ’07, 5029 Congress Ave., Oakland, CA 94601; alexsalinsky@gmail.com

—2008—

Teresa (Amaducci) Munger, a senior manufacturing engineer in the Hot Section Module Center at Pratt & Whitney, was named a recipient of the fourth annual 30 Under 30 awards from Manufacturing Engineering magazine and Advanced Manufacturing Media. She was one of 30 young manufacturing professionals from across the country chosen for their exceptional talent and leadership in STEM careers. Congrats, Teresa!

Anthony Richardson, assistant professor of management/management information systems, has become a tenure-track faculty member at Southern Connecticut State University following a pair of one-year special appointments. He has previously served as a project manager for Hartford Healthcare. Congratulations on tenure, Anthony!

Adam Plate completed his emergency medicine residency with the University of New Mexico SOM in Albuquerque serving as quality improvement and clinical operations chief resident. He is board eligible in emergency medicine with the American Board of Medical Specialties and obtained his Association of American Medical Colleges Teaching for Quality Certification. Congratulations, Adam!

Trent Gillaspie has published his first book, Judgemental Maps, based on his viral blog, JudgementalMaps.com. The site has been featured in Entrepreneur Weekly, The Huffington Post, Business Insider, The Atlantic, and more. The book serves as a truth atlas featuring cities across the United States, from Albany to Los Angeles, and everything in between. The book has been named a Best Seller on Amazon and was featured in Amazon’s Best Books of 2016 list, as well as their 2016 holiday gift guide in the “Fun & Quirky” category. Trent’s parents are not proud of the over-the-top offensive humor used in the book. I am not going to congratulate Trent.

Please keep your updates coming and make sure to like our Facebook page at facebook.com/RPIClassOf2008 and follow us on Snapchat. Just kidding, Snapchat will be dead by 2018.

Send news to: Trent Gillaspie ’08, 1820 Carlson Drive, Austin, TX 78741; trent@alum.rpi.edu

—2009—

Proud parents Dorothy Morton and Abraham Woodcox announced the birth of their son Dorian Grant Woodcox on Aug. 18, 2016. He weighed in at an impressive 8 pounds 6 ounces and was 21 inches long. We are happy to report that mommy, and baby are all doing well.

Send news to: Jordan Hagaman ’09, 117 Brookwood Ave., Wilmington, NC 28403; jhagaman@alum.rpi.edu

—2010—

Send news to: Meghan Lenihan ’10, 2984 Linwood Ave., #2, Cincinnati, OH 45208; lenhm@alum.rpi.edu

—2011—

Many members of our class made it back to Troy for Reunion & Homecoming weekend in October. I’d like to thank Liz Andrew, Greg Hart, Haris Khan, Bruce King, Andrew Neidhardt (newly married to lovely Caryn), and David Walsh who assisted me on the five-year reunion committee. About 50 classmates and significant others spent the Saturday night at Peck’s Arcade in downtown Troy, a bar and restaurant that opened after we graduated in 2011 and one of the highest-rated new restaurants in the country. It was a great evening catching up with old friends, making new ones, and we enjoyed a surprise visit by Dr. Jackson. Alex Parker opined a great point that evening—we’ve now been graduated from RPI longer than most of us attended it.

Now that five years after RPI is in the books, our 10-year reunion will arrive in a blink of an eye. If you’re interested in planning our next event, please let me know.

Timothy Jackson celebrated his marriage to Shamir Peshewa on October 22 in Pigeon Forge, Tenn. Congratulations to them.

Kristen Lee received the Emerging Leader of the Year award of the Society of Asian Scientists & Engineers (SASE) at the SASE National Conference in October. Kristen is a senior mechanical engineer for Raytheon Co. in Tewksbury, Mass. Congratulations!

As always, remember to send me any news you’d like to share with classmates. It was great hearing from those at Reunion what they’ve been doing these last five years—graduations, promotions, relocations, and marriages—we’d like to hear from you as well.

Send news to: Michael Zwack ’11, 6 Washington Place, Troy, NY 12180; zwack@alum.rpi.edu

—2012—

5th Reunion: Oct. 12-15, 2017 There has been a flurry of activity for Class of 2012 professionals over the past several months!

Jillian Vandegrift was named the Young Professional of the Year by the nonprofit WaterReuse. Jillian, who works for CDM Smith, was recognized...
for her notable contributions to research and advocacy for water reuse. She was presented with the award at the annual WaterReuse Symposium.

Praowpan Tansitpong, Ph.D. ‘12 Lally, has received the 2016 US-ASEAN Fulbright Visiting Scholar Fellowship to conduct health analytic research to improve the medical process for developing countries. Praowpan is currently a faculty member of Mahidol University in Thailand, and hopes that this news will inspire collaboration between RPI alumni and their communities.

On August 27, Greg Vernon was married to fellow Iowan Melissa Kula in Kansas City, Mo. Greg also recently received Honeywell’s most prestigious technical award in recognition of a trio of patent applications he filed in 2016, centered around a method for designing geometry-compliant lattice structures. He is currently serving as the interim lead for Honeywell’s computational materials modeling group. Congratulations, Greg and Melissa!

Speaking of nuptials, Megan Reile was recently engaged to Richard John Koharik. Megan and Richard are planning their wedding for July 2017. Rounding out our wedding updates, Melissa Clark and Cameron Helm were married on August 27, 2016. Melissa and Cameron are enjoying the sunshine in San Diego, Calif., where Melissa is finishing a Ph.D. in inorganic chemistry at UC San Diego, and Cameron is a software engineer for Northrop Grumman. Congratulations are in order for both of you!

Please continue to send your professional and personal updates. To stay connected with the Class of 2012, like our Facebook page, RPI Class of 2012, and follow us on Twitter, @rpiclass2012.

Send news to: Stephen Nock ’13, 15A Dimick
Sobkor@rpi.edu

—2013—

For this issue we caught up with former teammates from the women’s soccer program. While they’re scattered along the Eastern seaboard and out West, the girls reunite a few times each year. Let’s hop around the country to see what they’re up to!

First stop: Portland, Maine, where we find Kirsten Bombardier, DPT. She earned those letters—doctor of physical therapy—at the University of New England in May 2016 and now works at an outpatient orthopedic clinic.

Kelsey Byrne achieved President’s Club and Laboratory Consultant of the Year at WorldWide Life Sciences in 2015, then went on to become an account manager at Stryker Sustainability Solutions. You’ll find her on the soccer field twice a week near her home in Newmarket, N.H.

Somewhere in my vicinity (Boston, Mass.), Shannon Maguire returned from two years on the West Coast. She now works as an R&D engineer in the Vascular Access Group of AngioDynamics.

On to East Hartford, Conn., where Lauren Brumbaugh recently transferred from materials engineering at Pratt & Whitney to supervise production of military engines. Going on four years with P&W, Lauren founded Project STEM to educate local students about career opportunities, and serves as 2017 president of the company’s Women’s Council. She’s still on the soccer field, as well as playing volleyball.

In nearby Hartford, Melissa Pinsonneault stopped rent payments (and started a mortgage) when she recently bought a house. Melissa works as an actuary for The Travelers Companies. She is engaged to Brian Schenck Jr., with a wedding set for the upcoming summer. Do we toast to the house-warming or the engagement first?!

Next time you find yourself in good ole New York, NY., say hello to Alyssa Ancia. She’s an EP-TSS with St. Jude Medical in Brooklyn; she assists cardiologists with cardiac ablation procedures, as well as pacemaker and defibrillator implants. Alyssa completed professional qualifying exams to become certified as a cardiac device specialist and an electrophysiology specialist.

Jumping southward a few states, Nikki Goodsell makes her home in Columbia, Md. She works at the FDA as a biomedical engineer and lead reviewer in their Interventional Cardiology Devices branch. In her free time, she competes in powerlifting; she qualified for the USAPL Raw Nationals in the 57 kg weight class—congratulations, Nikki!

Somewhere on the Western coast—or maybe off the coast—we may run into Tessa McGee, if we can keep up. She defended her master’s in chemical oceanography at the University of Washington and went on to finish the Pacific Crest Trail.

Two other updates that I learned of: Sahiti Surapaneni started a new role with Media iQ Digital as a solutions engineer. From the men’s soccer program, Jake Tonkel completed his Peace Corps service in Morocco and is now in Cupertino, Calif., where he works for Relign Corp. as an R&D engineer.

Send news to: Stephen Nock ’13, 15A Dimick Street, Somerville, MA 02143; stephennock@gmail.com

—2014—

Send news to: Thomas Thayer ’14, 994 Burdeck St., Apt 705, Rotterdam, NY 12306; tthayer802@gmail.com

—2015—

Erin Riley has been selected to play in the 2017 Federation of International Lacrosse Women’s World Cup to be held at the University of Surrey, in Surrey, England, July 12-22.

Send news to: Sarah Spellane ’15, 2 Prout Ave., Apt. 5, Troy, NY 12180; sarahspellane@gmail.com

—2016—

I hope success and happiness has reached every single one of you in your first official year as graduates! To those of you who graduated this fall but started with the original Class of 2016, I would like to extend congratulations on behalf of our class!

With little surprise, many of our classmates have already gone out and achieved notable success. Three of our recent RPI alumni have accepted intern architect positions at Architecture+, a Troy architect firm devoted to design and service-oriented work. Congratulations to our classmates Hiroki Sawai, William Dorgan, and Smriti Keshani on this exciting accomplishment. Also, Smriti earned LEED Green Associate accreditation.

In sports, two of our athletes have gone on to continue their passion outside of school. Congratulations to Alexa Gruschow, who has signed a contract with the NY Riveters for the 2016-2017 NWHL hockey season. We will be sure to look out for you on the ice. Also, congratulations to Jamie Jackson, an RPI All-Liberty and All Region Golf Champion, who accepted the position of assistant coach to the RPI golf team.

Finally, congratulations to Adam Klich, who was named to the 2016 Top 40 Under 40 Military Class by CivilianJobs.com. The program recognizes the top performing service members who are serving or have served in the U.S. Armed Forces. Adam is an innovation adviser with RTI International.

Thank you and good luck in your endeavors, fellow classmates!

Send news to: Maggie Murphy ’16, 23 Green Way, Mahwah, NJ 07430; margaretmurphy1009@gmail.com
IN MEMORIAM

Louis H. Shornick ’39, retired president, Madison Furniture Industries, lifelong photographer, Class of ’39 correspondent, and WWII Navy veteran; Dec. 21, 2016.

Richard G. Trepp ’39, retired customer service specialist, Monsanto, restorer of clocks, and WWII Army veteran; Oct. 16, 2016.


Richard Madey ’43, molecular physicist and emeritus professor, Kent State University, and WWII Navy veteran; June 30, 2016.


Oliver E. Trechter Jr. ’45, retired general manager, Western Area, U.S. Steel Oilwell Division, and U.S. Army veteran; May 26, 2016.

Peter G. Kirchner ’46, retired design engineer, Bell Aerospace Textron, and WWII Navy veteran; May 30, 2015.

Russell E. Vannatta ’46, retired president, Mead Corp., former engineer and executive in the paper industry, and U.S. Navy veteran; Nov. 28, 2016.


Marilyn Broder Shavelson ’47, retired math and computer science teacher and tutor of mathematically gifted; Sept. 19, 2016.


Kenneth A. De Ghetto ’50, retired chairman, Foster Wheeler Corp., active in civic organizations and honored for his Rensselaer involvement, and WWII Navy veteran; Sept. 27, 2016.

Ronald L. Ford ’50, retired manager, program product evaluation, IBM Corp., and WWII Navy veteran; Nov. 24, 2012.


Dean E. Wright Jr. ’50, retired colonel, decorated officer of three wars, and retired logistics manager, Frequency Engineering Labs and EPS; Nov. 23, 2016.

Ernest A. Coleman II ’51, consulting chemist formerly with DuPont and Union Carbide, who earned 50 patents, and U.S. Navy veteran; March 17, 2016.

Samuel Kandel ’52, retired after 30 years with AT&T Bell Labs, where his patents led to call waiting and forwarding; April 27, 2016.


Richard J. Boyle ’52, retired research engineer, Submarine Arctic Research Lab, and retired lieutenant, U.S. Navy; April 22, 2016.

George C. Gatje ’52, M.A.E. ’58, retired U.S. Navy captain, and high school math teacher and department head; Sept. 15, 2015.

Donald L. Spanton ’52, retired head, Business Department, Meredith College, formerly with Lockheed Martin and IBM, and U.S. Army veteran; Oct. 7, 2016.


Henry M. Pollak ’54, retired president, former chief engineer, and patent holder, American Machine & Tool Co., and U.S. Navy veteran; April 17, 2016.

Allan Ratner ’54, intellectual property lawyer and co-founder, Ratner Prestia law office; Dec. 19, 2015.


Joseph S. Champagne ’55, M.C.E. ’59, traffic engineering design consultant and expert witness in accident reconstruction, and U.S. Navy veteran; April 2, 2016.


Remo J. D’Ortenzio ’56, M.S. ’58, retired member, research staff, Xerox Corp., and former Class of ’56 president; Jan. 29, 2016.


George J.A. Homolka ’61, M.E. ’69, Ph.D. ’71, retired after a career with Aramco, who then rebuilt his family estate in Czechoslovakia; Aug. 2, 2016.

Ralph B. Prescott ’62, retired senior systems analyst, RAEF Electronic Hardware, former ski club president and softball coach; Oct. 19, 2016.


Steven A. Wilmes ’79, chemical engineer and group manager at Thielsch Engineering Inc. in Cranston, R.I.; Nov. 5, 2016.


Mark D. Smith, longtime dean of students at Rensselaer (1986-2016); May 1, 2016.

In the Beginning
Computing at Rensselaer | BURT LIEBOWITZ ’57

The article “The Power of Computation” in the Rensselaer magazine [Spring 2016] is an awesome description of RPI’s Center for Computational Innovations (CCI). I am sure that RPI alumni are proud of the incredible work performed at the center, and its staff of 33 core researchers. For me, however, the center has a special meaning, since I was there “in the beginning.” The first digital computer—an IBM 650—arrived at Rensselaer in 1957, the year I graduated with a BEE. There was a computer lab at RPI, located in Mason House, but it consisted of an heirloom General Electric Mechanical Differential Analyzer (GEMDA), a Reeves Electronic Analog Computer (REAC), and some digital calculators. So the 650 was a major step forward.

To put things in perspective, it was not until my second term senior year that RPI even offered a computing course. I don’t remember its exact name but it was advertised (with a little poetic license on my part) as “everything you need to know about analog and digital computers.” This course—coupled with the arrival of the 650—came just in the nick of time, since I was totally clueless about what to do after graduation. I took the course, liked it, and applied for one of the four graduate assistantships created to support the newly arrived IBM 650. I was lucky enough to snare one of the assistantships, which, along with a proctorship in the freshman dorms, enabled me to continue my education at RPI by pursuing a master’s degree in mathematics.

So to compare things then and now: In 1957, the REAC could solve problems that involved differential equations. It was fired up for parents’ weekend, to predict and display the path of a bouncing ball and impress the parents. I don’t remember if the GEMDA was operational at the time I started work in the newly digitized computer lab. However, it was an impressive beast. It filled a room that was about 40 feet long. It could multiply by using gears of different sizes, located on very long shafts. It had devices called ball-and-disc integrators to solve differential equations. It was based on the technology used to control the guns on large naval vessels in World War II. The GEMDA was literally programmed using a monkey wrench. We very rarely went into the GEMDA room, but what I vividly remember was the sign—Do Not Program This Machine While Wearing a Necktie!

But let’s look at the star of the show—the IBM 650. Its main memory was a drum that supported 2,000 words of memory (about 9,000 bytes by today’s standards). The drum rotated at 12,500 revolutions per minute. The computer could average about 200 instructions per second. It was strictly a batch machine—you punched up data and programs and fed the cards to a card reader. It would grind away one program at a time and punch out cards with answers to the problem. You took the cards to another room and printed out the answers. We solved problems for professors and graduate students. If lucky, we could get answers within a couple of days of problem submission. The 650 generated a lot of heat, but that was good. It meant we had to work in an air-conditioned lab and became the envy of all other graduate students!

Now let’s compare the 650 to the digital computing assets in the CCI. The 650 could do 200 instructions per second; the current facility supports one quadrillion (10^15) instructions per second. The 650 had ~9x10^9 bytes of memory; the current capability has 80 terabytes. With the 650 you moved data to customers within hours or days. Today the communication access speed is four terabytes per second, and the system can support thousands of simultaneous users.

OK, so we were a little slower and less responsive to user needs back in 1957. I am truly impressed with the progress since then. But still I look fondly back on the good old days where, in retrospect, we were pioneers in bringing digital computing to RPI. And I especially remember working for Professor Jack Hollingsworth, the head of the lab, a great boss and true gentleman.

And I still will not program any computer while wearing a necktie.

Burt Liebowitz ’57 earned a bachelor of science in electrical engineering and a master of science in mathematics from Rensselaer. He lives in North Bethesda, Maryland. He works for the MITRE Corporation and presents seminars on satellite technology at technical conferences.
“When I received my scholarship, I was incredibly touched and excited. I never thought I’d receive something like this. Getting it gave me the confidence to pursue research and other academic goals that I never thought I could possibly achieve. It’s an amazing feeling to know that alumni are supporting you and helping you thrive.”

– Lauren Brady ’16, School of Engineering graduate student

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Lauren researches the use of ultraviolet LED sensors to detect bacteria and mitigate the spread of infections in hospitals. She also mentors students and volunteers extensively.

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