A NEW ANGLE ON HUMAN HEALTH

RESEARCH AT RENSSELAER IS TRANSFORMING HEALTH-CARE DELIVERY AND PATIENT OUTCOMES
Members of Jennifer Hurley’s lab met recently in the Center for Biotechnology and Interdisciplinary Studies to review their team’s research progress. Hurley, assistant professor of biological sciences, focuses on the fundamental mechanisms as well as the output of the circadian clock. Her research team includes Zachary Chase, a graduate student who majors in biochemistry and biophysics and is enrolled in the accelerated B.S./Ph.D. program, and Anusri Kadakuntla, an undergraduate student studying biological sciences in the accelerated physician-scientist B.S./M.D. program.
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Pictured (l-r): Gemel Joseph, doctoral student in biological sciences; Amy Loya, doctoral student in biomedical engineering; Douglas Swank; and Kaylyn Bell, doctoral student in biochemistry and biophysics.
The Center for Biotechnology and Interdisciplinary Studies was buzzing with activity over the summer, with more than 200 undergraduate and graduate students conducting research that will impact the global challenges facing humanity. In the lab of Douglas Swank, associate professor of biological sciences, researchers are using *Drosophila* (commonly known as the fruit fly) as a model organism to unravel some of the biggest mysteries of the human heart.

Swank has received funding from the National Institutes of Health to seek the molecular causes of hypertrophic cardiomyopathy, or enlarged heart disease. Using *Drosophila* enables Swank and his team to study aspects of the disease that cannot be studied in humans, other model organisms, or cell culture.

“Our goal is to try to understand the molecular mechanism behind this disease so that we can help develop better treatments,” Swank says.
Data Demands

Our reliance on data calls for increased cybersecurity

Even at play, Rensselaer people tend to take on the greatest of challenges. Today, one of the most popular clubs on our Troy campus is called RPISec. The students in this club are exploring—and teaching each other—all aspects of cybersecurity, including web security, cryptography, reverse engineering, malware analysis, memory corruption, and digital forensics. RPISec is among the very best in the nation at student-led computer security competitions known as “Capture the Flag.”

As the world moves more fully into the “Fourth Industrial Revolution,” in which the physical, biological, and digital are merging, such expertise in cybersecurity is increasingly significant. This Fourth Industrial Revolution is characterized by extreme connectivity and an avalanche of data, which together create both important opportunities and substantial vulnerabilities.

In medicine, for example, an ability to capture and analyze data at the molecular level is driving a new understanding of biological processes and the development of targeted treatments. Here at Rensselaer, Professor Juergen Hahn has developed the very first physiological, rather than behavioral, test for autism by applying big data analytics to numerous metabolites in a blood sample, and creating an algorithm to determine whether someone is on the autism scale. This breakthrough will allow earlier interventions for children and may point the way to potential treatments.

At the same time, this is a world in which hospitals regularly are subject to ransomware attacks that hold their data hostage. They often pay the ransom because they cannot function without access to patient data, and because of the sensitivity of the information they are charged with safeguarding.

Whereas data used to sit behind a moat, today it lives within an ecosystem that includes bad actors ranging from businesses that exploit data most of us would consider private, to hackers whose sole purpose is mischief, to cybercriminals profiting from stolen data, to cyberterrorists, to states engaging in cyberwarfare.

The more data we store, the harder it is to protect, as the surface area of exposure becomes larger and larger. The threat is end-to-end. It begins with the computer chips themselves, where there is fear that “backdoors” can be added in manufacturing. It includes network compromise, which is growing as the Internet of Things offers new avenues into networks through connected household devices with weak security controls.

And because data is linked increasingly to our physical reality, the threat includes physical destruction. We already have seen the compromising of critical infrastructure using digital industrial control systems accessed remotely: In December 2015, Ukraine’s power grid was disrupted by cyber intrusions at three regional electric power distribution companies.

If history is a guide, the students today playing the cyber version of Capture the Flag, tomorrow will tackle the risks represented by our digital age, and transform them into the greatest of opportunities.

Air transportation, in which almost every system is automated, represents another kind of vulnerable infrastructure. Several airlines already have been forced to cancel thousands of flights because a single point of failure brought down their information technology systems. Airports now are moving to virtual control towers. What if the data is manipulated, so that what air traffic controllers see no longer matches physical reality? The potential damage could make TSA checkpoints meaningless.

Finally, there are security risks even in the sheer ubiquity and accessibility of information in our world, which offer terrorists recipes for bombs, and the ability to radicalize people remotely.

Clearly, our reliance on data—and our interconnectedness—encompasses many intersecting vulnerabilities with potentially cascading consequences. Can we deter all such security risks? It is more likely that we will be able to detect and to mitigate them.

We need technological solutions. Can we design our data architectures differently, so that our systems have an immune-like response to malware, to isolate and limit the damage, and then fluidly to reconfigure the system? Social and political solutions also are key. We may need consortia to set standards. We may need an international agreement on cyberspace to address both security issues, and data sovereignty and privacy concerns—i.e., where should data reside, and who controls it—a major issue, which has been subject to new regulations in the European Union.

Also required is a culture change in the digital economy. Until now, security challenges have allowed for a kind of planned obsolescence, in which tech companies have benefited economically, by persuading consumers to buy the newest and safest version of their products. But the Fourth Industrial Revolution, with its potential for digitally controlled physical destruction, demands a new sense of responsibility.
Exploring Additive Manufacturing Potential

I was delighted to read the article in the Spring 2017 issue that covered in part Johnson Samuel’s working with IDEA to produce universal standards for additive manufacturing (“From Fundamental to Transformative”). That technology applied to metalworking seems to be an advanced version of the technology of powder metallurgy that I worked with as a technical editor and information analyst back in the late 1960s and early 1970s.

It seems to me that the early theoretical work on the sintering of molten metal powders might bear including in his study if it has not already been included. The publications of Henry Hausner (U.S.) and G.V. Samsonov (U.S.S.R.) and others working in the field should be checked, although computer simulations of the physics of the sintering process must have been done by now. The potential of additive manufacturing to produce truly exotic materials and alloys (even for microchip components) should not be underestimated.

Samuel Kao ’87
San Francisco, California

Remembering Beloved Columnist Lou Shornick ’39

Louis H. “Lou” Shornick ’39, photographer, philanthropist, and beloved alumni columnist, has died. Lou’s column, written in expository form, not as a traditional alumni column-style accumulation of notes, was for years an undisputed highlight of the RPI magazine.

I discovered it as a casual reader; I am the parent of a chemical engineering major, Class of 2017. Always, when the publication arrived, I skipped directly to Lou’s musings. Eventually, Lou’s column began to reflect his struggles putting the news together, and he declared his intention to quit. He regretted that so few of his school friends remained and the few who were in touch had little to report.

I was distraught; I loved Lou’s column too much to let it go. I wrote to him, columnist (Dear Digital Darling) to columnist. I told him how much I loved reading his stuff, how much I looked forward to it, and how much it meant to me. We commiserated about how little feedback is available to journalists.

Soon, he emailed me the stunningly moving photograph of Einstein on the tarmac that he had captured in 1939, because he knew I loved it. I printed it and framed it; it is one of my favorite images.

Not long after, I was reading the latest RPI alumni magazine. As always, I skipped to the Class of 1939. My phone rang, with a 601 area code; it was Lou, calling to check in. Eternally helpful, warm, caring, friendly, and, above all, smart, Lou was a doll of a friend (even if he never actually met you). Lou was 98 when he died. He never told me he was ill. Dear Lou, I miss you.

Lisa Miller ’17P
Valley Village, California

Rensselaer Medal Memories

After reading the recent article “100 years of the Rensselaer Medal” (Spring 2017), I wanted to share my family story.

My father, Donald McGovern, was a senior in high school in Dansville, New York, in 1942. Having the highest marks in math and science in his class, he was awarded the Rensselaer Medal at his graduation ceremony. Needless to say, soon after he graduated, he received his draft notice from Uncle Sam and the U.S. Army.

He completed basic training at Fort Knox. The Army recognized his abilities and enrolled him in the Army Specialized Training Program, a special engineering program at Indiana University in Bloomington. He and other recruits were put through a rigorous engineering training program—up at 6 a.m., classes all day, study hall, PT, and lights out at 11 p.m. My father contin-

Diet and Back Pain

Relating to the Spring 2017 edition of the alumni magazine, the biomedical engineering article “Diet and Back Pain: What’s the Link?”—I was hoping you could forward along some thoughts to Dr. Deepak Vashishth.

In my almost two decades of hand surgery practice, I, too, have seen many musculoskeletal problems that occur proportionately in diabetics. I have come to the working model that most non-traumatic musculoskeletal pains are a product of excess tension, in all patients. The pain is the way the body communicates that excessive tension, to allow us an opportunity to relieve that tension before damages occur in the long term, such as joint destruction or disc degeneration. Pain, essentially, is much like a check engine light, alerting us to malfunctions before they become catastrophic. Or pain is like a baby crying, using its only means of communicating to relay an assortment of messages.

Perhaps that is a pathway Dr. Vashishth might consider pursuing: that diabetic muscles have a greater predilection to excess tension. If he is interested, I have posted a small e-book on Amazon that elaborates on these thoughts.

Samuel Kao ’87
San Francisco, California

Sanford Zane Meschkow ’65
Wynnewood, Pennsylvania
ued in the coursework for several months, with his dream of becoming an engineer now seeming like a real possibility.

But once again, the country called—D-Day was approaching. The engineering program was canceled and he was off to Camp Campbell, Kentucky, for final invasion training with the 20th Armored Division. They sailed for France aboard the SS Brazil in January 1945 and landed 14 days later at Le Havre. They quickly loaded their tanks and chased the Germans through France, Belgium, Luxembourg and down through Germany. The 20th Armored ended their tour with VE-Day in Salzburg and helped liberate the Dachau concentration camp.

They shipped back to the USA in July 1945, ready to head to the West Coast and then to the invasion of Japan. They landed in New York Harbor on August 6, 1945—the day the atomic bomb fell on Hiroshima. Soon after, my father was discharged and headed home to his widowed mother and grandmother in upstate New York. With a family to support, his dreams of becoming an engineer were ended, but he always dreamed of going to RPI and finishing his education. He married my mother and had five children, and they will be celebrating their 60th wedding anniversary this year.

Fast-forward 32 years. I was getting my high school degree in the same Dansville high school my father attended, and I decided to attend RPI. I am attaching a recent picture of my father at 92 years old, with his RPI medal and his WWII veteran hat. He may not have been able to fulfill his personal dream of becoming an engineer, but he has supported me and my dreams all along the way.

LUANNE MCGOVERN ’82
Morristown, New Jersey

We’d 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; email to alum.mag@rpi.edu; or call (518) 276-6531.

EDITOR’S NOTE

Thanks for Letting Us Know!

Karl Petersen ’64 reached out to Rensselaer magazine to identify his Acacia fraternity brother Edward Segrist Jr. ’63, who was shown (but not identified) in the article “In the Beginning: Computing at Rensselaer” in the Spring 2017 issue. Segrist is pictured at Rensselaer’s first digital computer, the IBM 650.

According to Petersen, “Ed was a Navy ROTC Regular, Acacia fraternity officer, and White Key inductee. He opted for the nuclear engineering training after receiving his B.S. in physics and had a stellar career in the Navy. His friends knew he would go to the top in research or business, but Admiral Rickover won him over to the nuclear fleet. His friends also appreciated his astonishing musicianship in whistling and wondered how that would go over in a submarine.”

Thanks, Karl!

Donald McGovern, having the highest grades in math and science in his class, was awarded the Rensselaer Medal at his high school graduation ceremony in 1942.
As consumers demand more locally sourced vegetables and the farm-to-table movement continues to build momentum, New York greenhouses are faced with conflicting tasks focused on producing more quality vegetables while reducing overall energy consumption. Now, a newly formed public-private consortium called GLASE—The Greenhouse Lighting and Systems Engineering Consortium, led by researchers at Cornell University and Rensselaer—has been launched to transform the way greenhouses operate in order to reduce electricity use by 70 percent.

The seven-year, $5 million project funded by the New York State Energy Research and Development Authority will advance New York Governor Andrew Cuomo’s Clean Energy Standard that aims to have 50 percent of electricity come from renewable energy sources by 2030.

Plant physiology expert Tessa Pocock, who serves as a senior research scientist at the Center for Lighting Enabled Systems & Applications (LESA), will lead the work at Rensselaer. Pocock is fascinated by photosynthesis and has conducted research with plants in both academic and industry settings. “GLASE has the potential to create a more sustainable and profitable greenhouse industry. The systems engineering expertise at LESA and the agriculture expertise at Cornell make this an ideal partnership.”
NATIONAL COMPETITIVENESS

Manufacturing USA Partnership

Manufacturing USA, formerly the National Network for Manufacturing Innovation (NNMI), is a network of U.S. research institutes focused on advancing American manufacturing through public-private partnerships between U.S. industry, universities, and federal government agencies.

Through Manufacturing USA, industry, academia, and government partners are leveraging existing resources, and collaborating to nurture manufacturing innovation and accelerate commercialization.

Rensselaer has taken a lead role in three new Manufacturing USA Institutes focusing on smart manufacturing, biomanufacturing, and robotics.

The Smart Manufacturing Leadership Coalition will lead the new Clean Energy Smart Manufacturing Innovation Institute (CESMII), in partnership with the Department of Energy.

Rensselaer will lead the Northeast center for CESMII programs, involving regional partners from industry, academia, and government.

Overall, CESMII partners will bring more than $140 million in public-private investment from leading universities and manufacturers to develop smart technologies and systems for use in advanced manufacturing.

In biomanufacturing, Rensselaer will be a Tier 1 partner in the new $200 million public-private partnership to advance U.S. leadership in biopharmaceuticals. A $70 million award from the U.S. Commerce Department established the new National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL), complementing an initial private investment of at least $129 million from a consortium of more than 150 companies, educational institutions, nonprofits, and state governments.

NIIMBL, led by the University of Delaware, will advance U.S. leadership in the biopharmaceutical industry, foster economic development, improve medical treatments, and ensure a qualified biopharma workforce.

“This is a powerful new partnership that is uniquely positioned to have a profound impact on the state of the art in biomanufacturing of protein biologics, and cell and gene therapeutics,” says Jonathan Dordick, vice president for research and the Howard P. Isermann Professor of Chemical and Biological Engineering.

“Rensselaer has a long and distinguished history of important contributions to the field of biomanufacturing, and as a key member of NIIMBL, we expect that Rensselaer researchers will play a significant role in many aspects of this institute.”

Rensselaer also is a founding member of the Advanced Robotics Manufacturing (ARM) Innovation Institute. The Department of Defense (DoD) will provide $80 million in federal funding to launch the ARM Institute, led by Carnegie Mellon University, to stimulate robotics technology development in manufacturing environments. The investment will be matched by a $173 million contribution pledged by the more than 220 partners that make up the winning coalition.

According to the DoD, robotics is increasingly necessary to achieve the level of precision required for defense and other industrial manufacturing needs.
ACADEMIC EXCELLENCE

Information Technology and Web Science Program Ranked 1st

The Information Technology and Web Science program at Rensselaer has been ranked No. 1 among 35 undergraduate programs at national colleges and universities by College Choice, a leading authority in college and university rankings and resources.

“If you’re interested in this growing field, you can expect plenty of opportunities,” stated College Choice. “Computer and information technology is expected to grow at double-digit rates in the years ahead as cloud computing, big data, mobile computing, and computer networks all expand at a rapid pace.”

The ranking of the top 35 schools was based on each school’s reputation in the field and its return on investment. College Choice compiled data from U.S. News & World Report, the National Center for Education Statistics, and PayScale.com, as well as a survey of freshmen attitudes about academic reputation, financial aid offerings, and cost, published by the Higher Education Research Institute at UCLA. The survey also took into account graduate success rates in the post-college job market.

“Rensselaer’s IT programs, including the Bachelor of Science in Information Technology and Web Science, cover topics such as trust, privacy, and future web development,” stated College Choice in its description of Rensselaer. “More than 20 concentration options are available, including areas like arts, medicine, and artificial intelligence.”

Rensselaer first offered a bachelor’s degree in Information Technology in 1998, and in 2010 became the first university in the nation to offer an undergraduate degree program devoted to the emerging interdisciplinary field of Information Technology and Web Science (ITWS). ITWS combines technical courses and courses in human computer interaction, the social implications of information technology, communications, management, leadership, team building, and web science. Students can pair their IT degree with another field of study to form a dual major.

“We are delighted that the dedicated efforts of our ITWS leadership, instructional faculty, and staff have achieved this high level of national recognition,” says Curt Breneman, dean of the School of Science, within which the ITWS program is housed. “Under the leadership of director and chaired professor Peter Fox, the ITWS program has set new standards of excellence, technical rigor, and return on investment that underpin this ranking.”

NATIONAL RECOGNITION

National Academy of Engineering Elects Joe Chow

Joe Chow, power grid control expert and professor of electrical, computer, and systems engineering, has been elected to the National Academy of Engineering (NAE). Chow was elected for his technical contributions to modeling, analysis, and control of large-scale power grids.

Election to the NAE is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to “engineering research, practice, or education, including significant contributions to the engineering literature” and to “the pioneering of new and developing fields of technology,” according to the organization.

Over the past three decades, Chow has been at the cutting edge of electric power systems engineering. His work in modeling and control of large-scale power systems has growing applications in development and maintenance of smart grids. For example, his work on synchrophasors, devices that make real-time measurements of electrical quantities, allows new mechanisms to monitor the power grid for boosting the amount of energy that can be reliably transmitted on high-power, high-voltage electric grids.

Chow serves as the campus director of the Center for Ultra-wide-area Resilient Electric Energy Transmission Networks (CURENT), jointly funded by the National Science Foundation and the U.S. Department of Energy. CURENT is dedicated to developing the next generation of electric grids, or “smart grids,” that promise higher efficiency, greater reliability, and the smooth integration of renewable energy sources into large power transmission systems.

“Rensselaer has strong programs in power systems and power electronics,” Chow says. “Our vision is to develop ultra-efficient homes and buildings equipped with smart meters, easy interfaces that allow us to see when and how we’re using energy, and seamless integration of home-based solar and wind power generation into the larger grid.”
Rensselaer lost three important leaders and benefactors this year. President Emeritus Roland Schmitt, a renowned scientist and leader who played a significant role in helping to shape Rensselaer into a global institution, died on March 31. Former Chairman of the Rensselaer Board of Trustees Samuel Heffner Jr. ’56—founder and president of Dickinson-Heffner Inc., a successful building and land development firm in the Baltimore-Washington area—died on April 8. Dedicated alumnus and patron Howard P. Isermann ’42 died on August 6.

Schmitt was president emeritus of Rensselaer, serving as university president from 1988 to 1993. Through a distinguished career in research and education, Schmitt, Rensselaer’s 16th president, emerged as a respected national leader on legislative and policy issues related to research and development, technology, competitiveness, and higher education.

He spent 37 years at General Electric, retiring in 1988 as senior vice president for science and technology, and as a member of GE’s Corporate Executive Council. From 1978 to 1986 he directed the GE Research and Development Center in Schenectady. Schmitt served on the Rensselaer Board of Trustees from 1981 to 1988. As president of Rensselaer, he oversaw completion of the New Century Campaign for $207 million, and the establishment of a variety of new initiatives, including new research centers and degree programs. A respected technological leader, he brought national attention to Rensselaer. Schmitt received an honorary doctor of engineering degree from Rensselaer in 1997, and in 1999 he was named to the Rensselaer Alumni Hall of Fame. Schmitt and his wife, Claire, were generous supporters of Rensselaer and were members of the Stephen Van Rensselaer Society of Patroons.

Schmitt was a member of the National Academy of Engineering and a fellow of the American Academy of Arts and Sciences, the American Physical Society, the Institute of Electrical and Electronics Engineers, and the American Association for the Advancement of Science.

Heffner graduated from Rensselaer with a bachelor of architecture degree in 1956. After his graduation, he served two years in the U.S. Air Force, and then began a career in the real estate development business that spanned nearly 50 years and resulted in the development of several million square feet of office and industrial space in the Baltimore region, primarily in the vicinity of Baltimore-
Washington International (BWI) Airport.

Through the years, Heffner maintained close ties to his alma mater. He was a Board of Trustees member for 33 years, and served as board chair for 15 years, retiring in December 2010. During his term as chair, Rensselaer made significant strides in revitalizing the campus, including the renovations of many of the core campus buildings along with the construction of several new buildings, increasing enrollment and scholastic excellence.

During his tenure on the Board of Trustees, Heffner chaired two presidential search committees, the Advancement Committee, and the Rensselaer Technology Park Committee. He was also chair of Rensselaer’s New Century Campaign. He was a member of the Stephen Van Rensselaer Society of Patroons of Rensselaer, and received the Rensselaer Alumni Association's Alumni Key Award in 1980, Albert Fox Demers Medal in 1984, Distinguished Service Award in 1987, and the 1993 Fellows Award from the School of Architecture.

Howard P. Isermann, most known for the development of sunscreen, joined Van Dyk & Co. after earning his degree in chemical engineering from Rensselaer. There he developed the ultraviolet absorber that has become the most effective sunscreen in the world. In 1980, he founded Novarome Inc., manufacturer of fragrance compounds used in a wide variety of consumer products, from soaps to perfumes.

Isermann joined the Board of Trustees in 1986 and was named an honorary trustee in 1998. He received the Rensselaer Alumni Association Distinguished Service Award in 1994, and in 2003 was inducted into the Rensselaer Alumni Hall of Fame. He was a member of the Stephen Van Rensselaer Society and the Heritage Society of Patroons of Rensselaer.

His commitment to chemical engineering at Rensselaer has been exceptional. He served as chairman of the Chemical Engineering Advisory Council and was a generous benefactor of fellowships and professorships.

In 1989, the Institute renamed the department the Howard P. Isermann Department of Chemical and Biological Engineering. Through the Howard P. Isermann ’42 Fellowship Fund, more than 200 graduate students have benefited from collaborative scientific research, empowering them to tackle the world’s greatest problems. In 2016, Rensselaer dedicated the auditorium in the Center for Biotechnology and Interdisciplinary Studies in honor of Isermann.
**Chemical and Biological Engineering**

**Bacteria Make Natural Pigment From Simple Sugar**

**Nature makes the vibrant pigments manufacturers want for foods and cosmetics, but getting them from plants to the products we buy is so difficult that many manufacturers rely on artificial colors.**

Now, researchers at Rensselaer have shown that four strains of *E. coli* bacteria working together can convert sugar into the natural red anthocyanin pigment found in strawberries, opening the door to economical natural colors for industrial applications.

The research marks the first biosynthesis method using four strains of bacteria to manufacture a compound in a single step, says Mattheos Koffas, professor of chemical and biological engineering. Results appear in *mBio*, a publication of the American Society for Microbiology.

“For the first time, we are able to completely synthesize anthocyanins in a biological system,” says Koffas. “We feed the bacteria glucose and they do the rest. This demonstrates that an inexpensive technology can produce these valuable compounds.”

Manufacturers are increasingly interested in natural colors, a shift founded in research documenting the health hazards of artificial colors for foods and cosmetics. Natural pigments found in plants such as anthocyanins, carotenoids, or lycopene produce indisputably safe colors. Anthocyanins exist in a far broader spectrum than other pigment classes—producing all colors except green—and are responsible for natural color found in foods like blueberries, raspberries, black rice, and the hues of autumn leaves.

But producing anthocyanins for industrial use is challenging: plant-derived pigments require costly processing and produce inconsistent results; and because anthocyanin molecules are complex, chemists have been unable to synthesize them.

Koffas’ lab has been investigating a production method of anthocyanins involving genetic engineering since 2005. The current research divides the entire pathway among four different strains of bacteria, modified to assemble anthocyanin in stages. Researchers divided the pathway into “modules” that produced intermediates that easily diffuse out of the bacterial cell. When combined in a single flask, the first bacteria ingest sugar and produce “intermediate” compounds, phenylpropanoic acids, which are ingested by the second bacteria, which produces a second intermediate, and so forth until the fourth strain produces anthocyanin.

“I have no doubt that production of anthocyanins from a recombinant microbial host is the only viable method for making these compounds in an economically sustainable manner,” says Koffas.

Researchers at Rensselaer have shown that four strains of *E. coli* bacteria working together can convert sugar into the natural red anthocyanin pigment found in strawberries, opening the door to economical natural colors.

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**National Inventors Hall of Fame**

**Inventor of Drywall Honored**

Augustine Sackett, a student at Rensselaer in the 1850s, was inducted into the National Inventors Hall of Fame at a ceremony May 4 at the National Building Museum in Washington, D.C. Sackett was recognized for the disruptive invention of drywall, made of paper and gypsum, which revolutionized building construction.

“Few modern products have transformed construction as much as drywall,” reads his Hall of Fame citation. “Sackett Board, the prototype for drywall, was patented by Augustine Sackett in 1894, and the evolution of Sackett’s invention shaved weeks off the time needed to finish a building. Today, the average new house in America contains over 6,000 feet of drywall. It is a staple of modern structures.”

Augustine Sackett (1841-1914) studied at Rensselaer in 1857-58, and was listed as a member of the Class of 1862. His studies at Rensselaer were interrupted by the Civil War, during which he served as an assistant engineer in the Union Navy. After the war he settled in New York City, where he worked as an inventor and entrepreneur.

Prior to 1894, Sackett’s invention of a product intended as a sheath for walls and ceilings led to the formulation of Sackett Board.

“Consisting of a core panel of gypsum plaster sandwiched between two thick sheets of paper, Sackett Board was rigid but soft enough to admit nails, and tough enough not to crack during installation or ordinary use,” continues his citation. “It replaced the time-consuming and labor-intensive method of wet-plaster wall construction. Sackett Board could be installed in a single day.”

Sackett invented gypsum wallboard and the specialized machinery to make it, and his company built several plants for its production. In 1909 the U.S. Gypsum Company purchased the Sackett Plaster Board Company.
Just one day after he confirmed Neil Gorsuch as the Supreme Court’s newest jurist, Chief Justice of the United States John G. Roberts Jr. visited the Rensselaer campus and held a lively discussion with President Shirley Ann Jackson in front of a packed house at the Curtis R. Priem Experimental Media and Performing Arts Center. During the day, Roberts made surprise visits to two classes and met with members of the campus at a reception following the talk.

“The new justice is not a Republican. He’s not a Democrat. He’s a member of the Supreme Court,” Roberts said.

President Jackson began their conversation by saying that Rensselaer “must offer students breadth as well as depth in their education. So we’re pleased to present Chief Justice Roberts today.”

Though it’s not a “political” branch of the government, President Jackson said the Supreme Court currently does operate in a “highly political environment,” especially in light of the nomination for the late Justice Antonin Scalia’s replacement. She asked how, or if, the politics of the confirmation process for nominees is different than in the past.

Roberts pointed out that “throughout this whole process, the Supreme Court has been quietly going about its business of deciding the cases before it according to the Constitution in a completely non-partisan way. We’ve done it for the past 14 months and will do it going into the future now that we have a full complement. It is a real danger that the partisan hostility that people see in the political branches will infect the non-partisan activity of the judicial branch.”

The hour-long conversation touched on technology in the courtroom (“A tremendous revolution,” according to Roberts), tension around race issues and how strict interpretations of a Constitution written so long ago can allow fair decisions, and lifetime appointments to the court (Judges are not supposed to be popular, Roberts said. Lifetime appointments are vital).

President Jackson asked Roberts to offer Rensselaer students advice on “managing titans.”

“You have to have a light grip on the reins,” he said. Everyone is a leader in some sense—you must appreciate that others can sometimes lead more effectively. People bring different experiences to their jobs on the court, and that helps to fully inform the reading of the law, Roberts said.

“For every expert, there is an equal and opposite expert,” he said.
An algorithm based on levels of metabolites found in a blood sample can accurately predict whether a child is on the Autism spectrum of disorder (ASD), according to results of a recent study. The algorithm, developed by researchers at Rensselaer, is the first physiological test for autism and opens the door to earlier diagnosis and potential future development of therapeutics.

“Instead of looking at individual metabolites, we investigated patterns of several metabolites and found significant differences between metabolites of children with ASD and those that are neurotypical. These differences allow us to categorize whether an individual is on the Autism spectrum,” says systems biologist Juergen Hahn, professor and head of the Department of Biomedical Engineering. “By measuring 24 metabolites from a blood sample, this algorithm can tell whether or not an individual is on the Autism spectrum, and even to some degree where on the spectrum they land.”

Big data techniques applied to biomedical data found different patterns in metabolites relevant to two connected cellular pathways that have been hypothesized to be linked to ASD: the methionine cycle and the transsulfuration pathway. The methionine cycle is linked to several cellular functions, including DNA methylation and epigenetics, and the transsulfuration pathway results in the production of the antioxidant glutathione, decreasing oxidative stress.

Autism Spectrum Disorder is estimated to affect approximately 1.5 percent of individuals and is characterized as “a developmental disability caused by differences in the brain,” according to the Centers for Disease Control and Prevention. The physiological basis for ASD is not known, and genetic and environmental factors are both believed to play a role. People with ASD “may communicate, interact, behave, and learn in ways that are different from most other people.” According to the CDC, the total economic costs per year for children with ASD in the United States are estimated between $11.5 billion and $60.9 billion. Research shows that early intervention can improve development, but diagnosis currently depends on clinical observation of behavior, an obstacle to early diagnosis and treatment. Most children are not diagnosed with ASD until after age 4 years.

Researchers have looked at individual metabolites produced by the methionine cycle and the transsulfuration pathways and found possible links with ASD, but the correlation has been inconclusive. Hahn says the more sophisticated techniques he applied revealed patterns that would not have been apparent with earlier efforts.

“A lot of studies have looked at one biomarker, one metabolite, one gene, and have found some differences, but most of the time those differences weren’t statistically significant or the results could not be reliably replicated,” Hahn says. “Our contribution is using big data techniques that are able to look at a suite of metabolites that have been correlated with ASD and make statistically a much stronger case.”

The full results of Hahn’s work on ASD diagnosis are publicly available and Hahn is hopeful his work will lead to a widely available test that can support early diagnosis, although he does not intend to commercialize his results. For Hahn, the next step is to replicate the results with a new cohort working with his clinical collaborators. In the long run, Hahn hopes the model and diagnostic tool will aid in developing treatment options.

“If these pathways are different, what happens if I can manipulate the pathway so that it works similarly to the neurotypical ones?” says Hahn. “What do I need to prod? Which molecules do I need to add or take away?”
RESEARCH

“Situations Room” Sparks Advancements in Cognitive Systems

Rensselaer hosted the Fifth Annual Conference on Advances in Cognitive Systems in May, featuring presentations from researchers at organizations including the Naval Research Lab, MIT, Google, Georgia Tech, and IBM. As part of the event, the Cognitive and Immersive Systems Laboratory (CISL) at Rensselaer hosted a related workshop on cognitive and immersive systems, including a demonstration of the “situations room” the lab is developing as part of an ongoing collaboration between Rensselaer and IBM.

“This was the first time the CISL, a collaboration between RPI and IBM, hosted a workshop for researchers in multiple academic institutes to discuss and define the research agenda for cognitive and immersive systems. It was also the first time CISL sponsored the Advances in Cognitive Systems Conference, where people in the top research institutes meet to discuss cognitive systems research results,” says Hui Su, director of CISL. “It was an opportunity to demonstrate CISL research results and articulate CISL’s cross-disciplinary research agenda to our peer academic institutes.”

The annual conference brought together researchers with an interest in building computational artifacts that focus on high-level cognition and decision-making, reliance on rich, structured representations, and incorporation of insights about human thinking. The “situations room” CISL is developing is an example of an application for cognitive systems. The vision for the room is a space where humans can interact naturally with computers in collaborative situations like making business decisions, diagnosing medical issues, handling emergency response, and learning.

As an initial milestone, CISL has developed a prototype that ties together multiple technologies in a functioning space where humans can interact naturally with computers. The prototype situations room can understand and register speech, three specific gestures, the position of occupants of the room, their roles, and the spatial orientation of those occupants, triggering the correct cognitive computing agents to take action and bring data and information relevant to the discussion into the room in real time. The functions are rudimentary, but the promise is clear.

Research presented at the conference contributes to the original, yet unmet goals of artificial intelligence: to produce computational systems that reproduce a broad range of human cognitive abilities. Topics include conceptual inference and reasoning, memory storage and retrieval, language processing, social cognition and interaction, high-level execution and control, problem solving and heuristic search, and cognitive aspects of emotion.

Researchers with an interest in building computational artifacts that focus on high-level cognition and decision-making, reliance on rich, structured representations, and incorporation of insights about human thinking.

Adapting to Pesticides Causes Vulnerability to Amphibians

Amphibians can evolve increased tolerance to pesticides, but the adaptation can make them more susceptible to parasites, according to a team that includes researchers at Rensselaer. The research, led by Binghamton University, showed that wood frogs that evolved increased tolerance to pesticides showed greater susceptibility to a dangerous virus, although they also demonstrated reduced susceptibility to a parasitic worm.

“We have only recently begun to understand that amphibians can rapidly evolve tolerance to chemicals like pesticides, which on the surface is good news,” says Rick Relyea, director of the Darrin Fresh Water Institute at Rensselaer. “But now comes the bad news: With that tolerance there is a trade-off, which is that they become more susceptible to parasites that, in the case of ranavirus, can wipe out entire amphibian populations.”

Previous research showed that amphibians can evolve tolerance to pesticides in one of two ways. Amphibians that live close to agriculture can evolve higher baseline tolerance by passing tolerance on from generation to generation. Alternatively, if exposed to low levels of pesticides early in life, amphibians that live far from agriculture evolve the ability to induce higher pesticide tolerance within a few days, which is known as “inducible tolerance.”

To understand whether land use or evolving pesticide tolerance comes at a cost when facing other stressors such as parasites, the team identified 15 wood frog populations that vary in their proximity to agriculture and displayed either higher baseline tolerance or inducible tolerance. Using these populations, they measured the relationship between land use, evolutionary responses to a pesticide, and susceptibility to two common parasites: a trematode worm and a ranavirus.

The results showed that amphibian susceptibility to parasites was related to their proximity to agriculture and their evolutionary responses to pesticides.
Emily Kosmaczewski '16, M.S.'17, has been awarded a Fulbright U.S. Student Program grant for the 2017-2018 academic year from the U.S. Department of State and the J. William Fulbright Foreign Scholarship Board. Kosmaczewski will spend her Fulbright tenure conducting research on radio galaxies at Jagiellonian University in Krakow, Poland.

Kosmaczewski earned her bachelor’s degree in applied physics and aerospace science and her master’s in astronomy at Rensselaer. At Jagiellonian University, she will be researching infrared features of young radio galaxies with Lukasz Stawarz in the Department of High Energy Astrophysics, within the school’s Astronomical Observatory.

“The research group under Professor Stawarz is working to determine an evolutionary model for how radio galaxies form and ‘live,’” says Kosmaczewski.

In recent papers published by the Stawarz group, it has been suggested that radio galaxies may be formed within radio lobes. It was previously thought that they formed within accretion disks—large disks of dust and gas from which the galaxy’s jets of ionized matter originate. If this hypothesis proves correct, there will be infrared absorption present in the galaxy’s spectrum.

The Fulbright program emphasizes cultural exchange, and Kosmaczewski, in addition to her scientific research, will explore the differences in art and dance in Poland. At Rensselaer she spent two years working to improve theater on campus and served as director of the theater honor society.

“I will share my love of theater by planning group outings to the local theaters in Krakow, such as the District Cultural Institution and the Stary Theater, as well as participate in the all-girls choir group, Zenski Chor Akademicki,” says Kosmaczewski. “I think it is important for scientists to have an artistic outlet.”

Kosmaczewski is the eighth student from Rensselaer to win a Fulbright award, and the first to pursue research in physics.

Graduate Student Wins Fulbright Award

**Robust Polymers in Anion Exchange Membranes for Alkaline Fuel Cells and Electrolyzers**

A major impediment to the commercialization of anion exchange membrane fuel cells and electrolyzers is the preparation of a membrane with sufficient chemical and mechanical stability under the operating conditions of alkaline systems. Chemistry and Chemical Biology Associate Professor Chulsung Bae has invented a new class of polyarylenes with an improved synthetic design providing chemical and mechanical stability and, therefore, durability and performance of membranes formed using this polymer. The design of the polymer backbone renders them more chemically stable at standard fuel cell operating temperatures. Additionally, the synthetic strategy employs a variety of sterically hindered quaternized ammonium groups increasing chemical stability of the active anion transporting side chains. Potential uses of these robust polymers include electrolyzers, metal-air battery application, actuators, sensors, and compressors.

**Photonic Crystals for Improved Solar Energy Harvesting**

Current photovoltaic crystals yield solar cells with an undesirable dollar-per-watt cost driven by poor near-infrared absorption of the product. To help address the significant demand for stable and renewable energy, Constellation Professor of Physics, Applied Physics, and Astronomy Shawn-Yu Lin has created a novel and economic photonic crystal structure that improves light trapping by exploiting a Gaussian-type gradient-index profile, therefore decreasing losses due to reflection and near-orthogonal energy flow. Combined, these properties improve near-infrared absorption and increase overall solar energy harvesting. Experimentation has shown improved efficiency as sustained all the way to a 60 degree incident angle. The crystals can be produced using a simple process suitable to high throughput, wafer-scale fabrication. Aside from solar energy cells, potential applications of these unique crystals include novel organic and inorganic light-emitting diodes (LEDs) for enhanced light extraction in solid-state lighting and flat-panel and flexible displays.

To learn more, go to www.rpitechnology.com or email otc@rpi.edu.
Organic additives found in road salt alternatives—such as those used in the commercial products GeoMelt and Magic Salt—act as a fertilizer to aquatic ecosystems, promoting the growth of algae and organisms that eat algae, according to research published in the *Journal of Applied Ecology*. Low levels of magnesium chloride—an alternative type of salt found in the commercial product Clear Lane—boost populations of amphipods, tiny crustaceans that feed on algae and serve as an important food source for fish.

Alternatives and additives to the most common form of road salt, sodium chloride, are marketed as environmentally friendly replacements because they allow highway crews to maintain ice-free roads while applying less salt. But the alternatives and additives may not be without environmental consequences, says Rick Relyea, director of the Jefferson Project at Lake George.

“Additives and alternative salts are presumed to be less environmentally harmful because they let us use less sodium chloride, but what about the potential impact of the additives and salt alternatives themselves?” says Relyea, professor of biological sciences and the David M. Darrin ’40 Senior Endowed Chair. “We know almost nothing about the impact of these additives and alternatives on aquatic ecosystems.”

The research is part of the Jefferson Project at Lake George—a collaboration between Rensselaer, IBM Research, and The FUND for Lake George—founded to develop a new model for technologically enabled environmental monitoring and prediction to understand and protect the Lake George ecosystem and freshwater ecosystems around the world.

As part of the Jefferson Project, Relyea’s lab has undertaken a series of experiments into the effects of various road salts on diverse aspects of aquatic food webs, with some surprising results.

Many of the experiments make use of mesocosms, large outdoor tanks or chutes filled with water and outfitted to mimic lake, wetland, or stream ecosystems. Close to 1,000 mesocosms, which mimic lake or wetland ecosystems, are located at the Rensselaer Technology Park.

In the new research on salt alternatives—the first study to ever compare the effects of road salt alternatives and additives on aquatic ecosystems—researchers outfitted 64 mesocosms with many of the important players in an aquatic food web including algae, zooplankton, amphipods, isopods, and snails. The researchers prepared five different “treatments” of road salts. They applied each treatment at concentrations that span a range commonly found in lakes, ponds, and wetlands: 50, 100, and 200 milligrams per liter of chloride. A control treatment used tap water, which contains 25 milligrams per liter of chloride.

“Our research shows that these chemicals can cause changes to the food web, but we can’t tell you whether that is desirable or not,” Relyea says. “More algae means more zooplankton and more fish, and the angler might like that. But more algae also means turbid water, and a homeowner may not like that. It’s a subjective public question.”

The fund, founded to manage and protect Lake George and its watershed, is currently undertaking a feasibility study to expand the Jefferson Project into a lake-wide network of mesocosms. It will also incorporate a deeper evaluation of salt alternatives in the lake’s ecosystem.

“Beyond questions about the potential impact of additives and alternatives on aquatic communities, it is clear that the use of road salt and road salt alternatives is an important problem,” says Mary Simoni, dean of HASS. “It’s a subjective public question.”

## JEFFERSON PROJECT AT LAKE GEORGE

**Road Salt Alternatives Alter Aquatic Ecosystems**

**COMMUNITY READ**

**Cultivating What It Means To Be Human**

Faculty from the School of Humanities, Arts, and Social Sciences (HASS), in partnership with Student Life, have selected two titles for the 2017-18 Community Read. The selected books are *Humans are Underrated: What High Achievers Know That Brilliant Machines Never Will* by Geoff Colvin, and *The Sixth Extinction: An Unnatural History* by Elizabeth Kolbert.

“These inspiring and provocative books will be used in many of our HASS Inquiry courses—courses designed to challenge first-year students to question the essential nature of some of the biggest problems facing humanity from a multitude of perspectives,” says Mary Simoni, dean of HASS. “We aim to deeply cultivate what it means to be human...to be curious, empathic, passionate, and creative.”

The HASS Inquiry curriculum brings together first-year students from all five schools for an intensive set of courses designed to make them think about their roles as global citizens in a global community as they embark on their Rensselaer education. These courses focus on fundamental social, ethical, philosophical, and economic questions.

Bram van Heuveln, lecturer in the Department of Cognitive Science, teaches *Minds and Machines*, one of the HASS Inquiry courses which, he says, are based on themes or “big questions” and cut across disciplines.

“The ‘big theme’ of *Minds and Machines* is artificial intelligence: Is it possible, and if so, is it desirable?” says van Heuveln. “We’ll take a look at whether it is possible for machines to be just as intelligent as humans are, and even if not, the effect that AI has on us and society at large.”

“We’ll use the book to explore the question: What is it that humans bring to the table; what is it that makes humans valuable, and that humans are good at, and machines are (at least as of yet) not?” says van Heuveln. “And I like the positivity of that message: It puts the focus on humans, not machines.”
New Men’s Hockey Coach Named

**Former Canisius College men’s hockey head coach Dave Smith has been named head coach of the Division I Engineers men’s ice hockey program.**

Smith led the Canisius College men’s ice hockey team for 12 seasons. At Canisius, he built the men’s ice hockey program to a number 25 ranking among Division I NCAA men’s ice hockey teams. Smith guided Canisius to a 21-11-7 record last season and was named the Atlantic Hockey Coach of the Year after winning the program’s first regular-season title. He led the Golden Griffins to three straight trips to Atlantic Hockey Championship weekend for the first time in school history, including consecutive appearances in the title game and the team’s first crown in 2013. The program has also received national attention with its graduates having unprecedented success at the professional level.

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GWO-CHING WANG, professor of physics, has been elected as a fellow of the Materials Research Society “for seminal contributions to the fundamental understanding of surface and thin film ordering using electron diffraction and the invention of electron pole figure technique for growth front texture analysis.” Wang’s recent research focuses on developing new materials for solar cells.

ARIC WILLIAM KRAUSE has been appointed dean for academic and administrative affairs for Rensselaer at Hartford. Over the last 10 years, he has built innovative academic undergraduate and graduate programs for delivery to adult learners in both the United States and in international markets. His previous positions include vice provost and dean of the graduate school for the University of Maryland, University College campus, and dean of the Division of New Learning at Westminster College in Salt Lake City, Utah.

MICHAEL SHUR, the Patricia W. and C. Sheldon Roberts Professor of Solid State Electronics, was named a fellow of the National Academy of Inventors (NAI). NAI fellow status is accorded to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society. Shur is a recognized leader for his pioneering contributions to deep ultraviolet light-emitting diode technology.

WILL FAHEY, manager of professional and organizational development, has been named the 2017 Pillar of Rensselaer. 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.

MARIANA FIGUEIRO has been named director of the Lighting Research Center (LRC). She is among the world’s leading experts in the area of light and health, with a focus on bridging science to practical applications aimed at improving human quality of life. Figueiro has been with the LRC for 20 years, where she started as a graduate student in the M.S. in Lighting program. She continued as a staff scientist at the LRC and in 2004, obtained her Ph.D. from Rensselaer. In 2006, she was offered a tenure-track position as an assistant professor and in 2014, was promoted to full professor.

EDMUND PALERMO and CHAITANYA ULLAL, assistant professors of materials science and engineering, have each won a Faculty Early Career Development Award (CAREER) from the National Science Foundation (NSF). The CAREER Award is given to faculty members near the beginning of their academic careers and is one of the most competitive and prestigious awards given by the NSF to junior faculty. Palermo will use his five-year, $539,177 award to study “Biomimetic Macromolecules at the Materials-Microbe Interface.” His research is designed to enable human control over the interaction between plastics and harmful bacteria to create surface coatings that kill germs on contact and prevent the accumulation of harmful biofilms on surfaces. Ullal will use his five-year, $556,091 award to study the structure of hydrogels—jelly-like materials that have some of the properties of solids, but are largely composed of water. The grant will allow Ullal to use sophisticated imaging techniques to characterize the structure of hydrogels.

SUVRANU DE, the J. Erik Jonsson ’22 Distinguished Professor of Engineering and head of the Department of Mechanical, Aerospace, and Nuclear Engineering, has been selected as a fellow of the U.S. Association for Computational Mechanics (USACM). A prolific researcher, De is known internationally for his work on meshfree methods, multiscale modeling, and real-time computing as they are applied to the numerical solution of coupled partial differential equations. A major aspect of his research program is developing new touch-sensitive virtual reality tools for training surgeons and simulating experimental surgical techniques. De is founding director of the Center for Modeling, Simulation and Imaging in Medicine at Rensselaer.

GANPATI RAMANATH, the John Tod Horton ’52 Professor of Materials Science and Engineering, and ZVI RUSAK, professor of mechanical, aerospace, and nuclear engineering, have been named fellows of the American Physical Society (APS). Each year, no more than one-half of 1 percent of the society membership is recognized by their peers for election to the status of fellow. Nominated by the APS Division of Materials Physics, Ramanath was cited for “creative approaches to realize novel properties in bulk nanomaterials fabricated from nanocrystal building blocks and molecularly tailored interfaces; and uncovering atomistic and electronic structure-level mechanisms of property enhancements.” Rusak was recognized by the Division of Fluid Dynamics for his “seminal contributions to the theoretical understanding of vortex flow stability and the vortex breakdown phenomenon, and for insightful analytical studies of viscous flow dynamics, transonic flows, and aerodynamics of airfoils.”

JENNIFER PAZOUR, assistant professor of industrial and systems engineering, has received the Dr. Hamed K. Eldin Outstanding Early Career IE in Academia Award. The award, which is presented to only one recipient, recognizes individuals in academia who have demonstrated outstanding characteristics in education, leadership, professionalism, and potential in industrial engineering, according to the Institute of Industrial & Systems Engineers.
Tackling Human Health From Every Angle

Research at Rensselaer is transforming health-care delivery and patient outcomes.

BY ELISA GALLARO
Your mother and older brother were diagnosed with Type 2 diabetes in their mid-50s, and your doctor says you could easily follow in their footsteps. Your numbers—for cholesterol, blood pressure, and blood sugar—are all moving in the wrong direction. Up.

You know you’ve got to try harder, so you started wearing a fitness tracker and paying more attention to what you eat. You read about new diets and exercise programs, but there’s so much information out there. How do you sort through it and uncover what would work best to keep you from developing diabetes, given the way you live your life? What lifestyle changes could truly make a difference?

That’s what researchers at Rensselaer and IBM are working on right now at the new Center for Health Empowerment by Analytics, Learning, and Semantics (HEALS). Located on the Rensselaer campus, HEALS is a breakthrough effort to use cognitive computing capabilities to help individuals understand and improve their own health, and to assist doctors and researchers in helping patients with chronic conditions.

“One exciting thing about HEALS is figuring out how to help people help themselves by looking beyond traditional medical resources,” says James Hendler, HEALS director and Tetherless World Senior Constellation Chair of Computer, Web, and Cognitive Sciences. “I believe that just about everybody could benefit from information that is already on the web, if only they could find it and understand how it impacts their own health.”

While the HEALS team, using IBM’s Watson technology, focuses on cognitive computing, scientists and engineers at the Rensselaer Center for Biotechnology and Interdisciplinary Studies (CBIS) are developing a blood test to detect autism; using stem cell bioengineering to tackle Alzheimer’s, osteoporosis, and osteoarthritis; creating a contamination-free form of the blood thinner heparin; and developing a new diagnostic test to predict comorbidities, such as fracture, that are associated with diabetes. In the Center for Lighting Enabled Systems & Applications and the Lighting Research Center, Rensselaer and its academic and industrial partners are exploring ways to use light to reduce stress and improve health and well-being. And, through affiliations with the Icahn School of Medicine at Mount Sinai and Albany Medical College, Rensselaer is educating the next generation of scientists and engineers who are prepared to tackle global health problems through an interdisciplinary education.

This is the Rensselaer approach to improving human health—and The New Polytechnic in action.
Engaged in by a broad spectrum of participants, The New Polytechnic ultimately will facilitate novel and effective approaches to global challenges.

The New Polytechnic reflects Rensselaer’s recognition that today’s challenges are too complex to be addressed by even the most talented researcher working alone. In response, the university has positioned itself to create and capitalize on new partnerships. The New Polytechnic is not content simply to tear down old silos or, even, to build new bridges. Instead it envisions an extensive network that connects great minds and pioneering technology within and beyond Rensselaer to achieve the common goal of improving life on a grand scale.

Nowhere are the advantages of this approach more apparent than in Rensselaer’s efforts to advance human health. And CBIS, one of the most advanced biotechnology research facilities in the U.S., is central to those efforts.

“CBIS interweaves life sciences, physical sciences, and engineering into the fields of biotechnology and medicine, opening exciting new pathways to innovation and discovery,” says Deepak Vashishth, CBIS director and professor of biomedical...
engineering. “From complex biological networks to nanoscale assemblies that mimic biological processes, CBIS is a powerhouse of academic and research advancement.”

More than 200 scientists and engineers from many departments come together at CBIS to uncover the molecular basis of biological mechanisms and disease, using biological systems as the basis for new therapeutics, and developing new cellular niches critical in tissue regeneration. Their discoveries ultimately will lead to new products and processes to address key challenges in health care, including drug safety, disease diagnosis and treatment, tissue engineering, and regenerative medicine.

EXAMPLES ABOUND

CBIS member Robert Linhardt, the Ann and John H. Broadbent Jr. ’59 Senior Constellation Professor of Biocatalysis and Metabolic Engineering, led a multinational effort to develop a new drug to treat the flu. The project is a collaboration between CBIS researchers and their colleagues at several institutions in South Korea. Seok-Joon Kwon, a CBIS research scientist, coordinated the project across borders, enabling the South Korean institutions to test a drug designed and characterized at Rensselaer.

Since influenza A infects victims by latching onto sialic acid on the surface of cells in the lungs, researchers decided to create a decoy. Their spherical nanoparticle, coated in sialic acid, is misted into the lungs, where it lures and traps the influenza A virus until it self-destructs. In a study on immune-compromised mice, the treatment reduced influenza A mortality from 100 percent to 25 percent over 14 days. This method could be used against Zika, HIV, malaria, and other infections.

A team led by Juergen Hahn, professor and head of the Department of Biomedical Engineering, has developed the first physiological test for predicting autism. The team applied big data analysis techniques to investigate the patterns of 24 metabolites in blood samples and develop a predictive model. The model was highly accurate, as was confirmed in a clinical trial, correctly identifying those on the autism spectrum more than 95 percent of the time. This new understanding of the metabolites that indicate autism spectrum disorder can be used for diagnosis and could aid in the development of treatment options in the future.

“This innovative work and other efforts at CBIS show how breakthroughs in health care are possible when we focus our work at the interface of traditional boundaries,” Vashisht says.

A POWERFUL PARTNERSHIP

In addition to working with industry, Rensselaer routinely partners with other universities. Researchers collaborate on health-related projects with colleagues from Columbia, Rockefeller, Stanford, Texas A&M, University of Colorado, University of Maryland, University of Pennsylvania, University of Virginia, and others. Among the most extraordinary partnerships is the affiliation between Rensselaer and the Icahn School of Medicine at Mount Sinai. Together, a world-class technological research university without a medical school and a world-class medical school without a technological research university are achieving what neither could on its own.

The partnership opens doors for students interested in pursuing a medical degree at the Icahn School of Medicine and creates internship opportunities in Mount Sinai clinical labs. Students from both institutions benefit from joint courses that tap the expertise of faculty from Rensselaer and Mount Sinai. Equally important, the affiliation sets the stage for groundbreaking research and discovery. Rensselaer and Mount Sinai teams have collaborated on projects targeting cancer, vascular disease, hepatitis, musculoskeletal disease, influenza, and drug abuse.

The Rensselaer-Mount Sinai partnership has generated $35 million in combined research grants from multiple agencies. One, from the National Institutes of Health (NIH), supports new research in environmental and children’s health. As part of the NIH’s Children’s Health Exposure Analysis Resource, Rensselaer and Mount Sinai are helping to assess the range and extent of environmental exposures on children’s health. Deborah McGuinness, Tetherless World Senior Constellation Chair of Computer Science, is principal investigator for the Rensselaer team involved in the project. Kristin Bennett, professor of mathematical sciences, is co-principal investigator.

Together, they are leading the ontology and data science research for a Data Repository, Analysis, and Science Center.
to help advance the emerging field of “exposomics,” the study of environmental exposures in humans, from conception through development. Their work includes creating an “ontology”—establishing a machine-readable vocabulary so computers can extract, aggregate, and analyze information from multiple sources.

In this case, their ontology development is instrumental in creating a public resource of children’s exposures nationwide so researchers can assess the full range of environmental exposures that may affect children’s health. The data center provides a methodology for combining data from a wide range of environmental health studies, develops statistical approaches for analyzing exposomic/chemical mixtures, and performs big data science, integrating exposomics with genomics.

“Rensselaer’s expertise in computational science and engineering—including data science, semantics, and predictive analysis—will yield transformative knowledge about the effect of environmental factors on human development and lead to strategies to improve child health,” says Jonathan Dordick, the Howard P. Isermann Professor of Chemical and Biological Engineering and vice president for research.

EMBRACING GLOBAL CHALLENGES

Cancer is the second leading cause of death worldwide, responsible for 8.8 million deaths in 2015. The World Health Organization expects new cases to increase by about 70 percent over the next two decades. In many of these cases, treatment will include chemotherapy.

Current chemotherapy strategies struggle to deal with the variability of cancer from patient to patient. Individualized treatment could help improve outcomes, but researchers have found it difficult to isolate and analyze cancer cells without altering them. An inexpensive device, invented by a team led by Biomedical Engineering Associate Professor Ryan Gilbert, addresses this problem. The device enables researchers to separate 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 precise isolation of different types of cells and promoting their growth, the system effectively facilitates experimentation in cell profiling, drug discovery and development, and genomic studies.

Another Rensselaer innovation offers great promise in solving a different research challenge and advancing drug discovery. To learn what different cells do, scientists switch them on and off and observe the effects. There are many methods to accomplish this, but they all have problems: too invasive, too slow, or not precise enough. Now, a new method to control the activity of neurons in mice, devised by scientists at Rensselaer and Rockefeller University, avoids these downfalls by using magnetic forces to remotely control the flow of ions into specifically targeted cells.

Dordick and colleagues successfully employed this system to study the role of the central nervous system in glucose metabolism, which is fundamental to human health. Their findings suggest that a group of neurons in the hypothalamus plays a vital role in maintaining blood glucose levels. This new understanding of how the brain helps regulate glucose—and how to remotely activate cells in specific areas of the brain—could lead to the development of new therapies for metabolic and neurologic diseases.

AN IN-DEMAND INNOVATOR

When organizations are seeking an innovator, time and again they turn to Rensselaer. In 2014, for example, Rensselaer was asked to be a charter partner of Optum Labs, the collaborative research and innovation center founded by Optum and Mayo Clinic. As a partner, Rensselaer has access to information resources, proprietary analytical tools, and scientific expertise to help spur the discovery of new applications, test new care pathways, and drive innovation in wellness and care delivery. Faculty and students are working together, analyzing about 150 million patient records to help uncover new uses for pharmaceuticals and better medical treatment.

Through another collaborative effort—the Cognitive and Immersive Systems Lab (CISL)—Rensselaer and IBM are at the forefront of the pioneering field of cognitive
and immersive systems. CISL’s mission is to explore and advance problem-solving among groups of humans and machines. The lab is built around a futuristic “Situations Room” that can be adapted to industry-specific environments, including medical diagnosis rooms, to improve how people work together.

With HEALS, their newest collaboration, IBM and Rensselaer are pursuing the bold goal of helping people with chronic medical conditions, from diabetes to cancer. The two organizations are deploying their expertise in cognitive computing to provide patients and doctors with highly personalized information that million results, more than any individual could hope to review. And that doesn’t include non-digitized medical literature.

Using big data analytics, state-of-the-art machine learning, and the technologies of the semantic web, researchers will individualize the relevant health-care knowledge and help people discover the most relevant information on behaviors that could prevent prediabetes from progressing and becoming a more serious, chronic condition. In essence, HEALS will provide users with a powerful partner to help manage their health. Beyond diabetes, HEALS will also help medical practitioners, researchers, and patients deal for the advantage of physician skill and experience.

“Recent studies show again and again that a doctor working with a medical computer will outperform the doctor alone or the computer alone every time,” Hendler says. “The same needs to become true for patients.

“With the new technologies we are exploring at Rensselaer, a patient with a cognitively enhanced computer will be able to stay healthy much better than a patient alone,” he adds. “If we could extend that to hundreds of thousands of patients worldwide, the impact on global health would be immeasurable.”
DESIGNS FOR THE REAL WORLD

BY JANE GOTTLIEB
THE O.T. SWANSON MULTIDISCIPLINARY DESIGN LABORATORY
ALLOWS STUDENTS TO EXPERIENCE THE ENGINEERING
WORKPLACE OF THE 21ST CENTURY—AND TO HELP PEOPLE
ALONG THE WAY.

WITH TWO WEEKS LEFT IN THE SEMESTER, THERE WAS STILL SOME FINE-TUNING NEEDED ON THE
DEVICE THAT DAVID WHALEN HOPES WILL HELP HIM USE A FORK AND SPOON FOR THE FIRST TIME IN
OVER 35 YEARS.

Whalen, a local man who suffered spinal injury in a 1981 skiing accident, had had some success with the
device, a metal gripper equipped with hand supports. He had used it to grab an item from a shelf and off the floor.
But the gripper was difficult to reach from his wheelchair because it locked into a fixed docking station. And,
because of his limited mobility, Whalen sometimes struggled to get his soft hand braces to attach to the gripper’s
supports. He brought the design challenge to Rensselaer. A team of engineering students spent a semester
modifying the docking station so the gripper could pivot at angles they hoped he could reach. They replaced his
soft hand braces with hard plastic restraints they molded from Whalen’s lower arms. And the student engineers
outfitted the right-hand brace with slots he could fit a fork or a spoon into.

“We got feedback from David,” says Fangchen Liu ’17, a materials engineering major, who viewed a simulation
on her laptop as teammates worked on their project tasks. “He needs us to change the attachments where he will
use the utensils, to make them closer to his thumb.”

In place of a course devoted to just studying the equations and theories of mechanical, industrial, materials,
or electrical and computer systems engineering, Rensselaer’s senior engineering students spend a semester in a
capstone design course applying them to solve a real problem.

In place of a classroom, they meet at the O.T. Swanson Multidisciplinary Design Laboratory to take on design
challenges for industry, service organizations, or entrepreneurs. Working in multidisciplinary teams of six to eight,
and coached by a professor and a highly experienced project engineer with extensive industrial experience, they
formulate the problem and conceptualize designs. They build prototypes and test their solutions in a fabrication
lab equipped with state-of-the-art machining equipment, 3-D printers, and other devices.

They contribute, as well, to a final written report and a project presentation before a review panel consisting
of project engineers, professors, and the sponsor.

“It’s been really worthwhile to see the person whose problem we are trying to solve,” notes Brendan Connolly
’17, a mechanical engineering student who with his team had visited Whalen at home half a dozen times.
“You definitely work harder because it means more.”
The Design Lab capstone course was introduced in 2000 to assure that Rensselaer engineering students have real-world experience. With major support for the facility from honorary trustee Robert Swanson '58 and his wife, Cynthia Shevlin, the Design Lab was named in honor of Swanson’s father. Each semester approximately 200 seniors from across engineering disciplines—60 percent of all engineering students—take the required three-credit class.

As a result, several thousand graduates have assisted industry leaders such as General Electric, Boeing, Corning, and Raytheon, nonprofits such as the Albany Guardian Society and The Arc of Rensselaer, an entrepreneur floating an idea, or a person in need. They have helped companies reduce costs, improved an existing technology, and enhanced the lives of individuals with disabilities.

To do this, students need to apply the engineering principles they have learned in the classroom. They also have to work as a team and document their findings. Also crucial: Students in the Design Lab have to manage their time; at least five hours a week is generally needed on top of the two two-hour lab classes.

“This is the first class for many of them that involves working with an outside sponsor,” notes Design Lab Director and Professor of Practice Kathryn Dannemann ’80. “It requires communication and follow-up with the sponsor, and teaches them project and time management skills. They can’t cram the night before the exam.”

“Rensselaer is unique in its multidisciplinary capstone approach and the use of full-time project engineers to coach the project teams,” she says.

A sprawling space that feels more like a meeting room than science lab, the Design Lab is surprisingly quiet given all that happens on a given day.

One afternoon last spring as a team completed the gripper, another was hard at work adapting a commercial pill dispenser for people with physical and cognitive disabilities.

Previous teams had developed a pivot allowing the dispenser to tip so a pill could drop out. The collaborator, The Arc of Rensselaer County, which hopes to implement the design, found the pivot required too much precision for an individual with arthritis or Parkinson’s. Last semester’s team modified the design for ease of use.

“It works well, but still doesn’t quite look like something someone would want to use,” says Erik Baktis ’17, a mechanical engineering major who smoothed edges of a smaller version now made from plastic in place of wood.

Another team, also assisting The Arc of Rensselaer County, was improving a hoist used to move a disabled person from bed to chair. Students had modified it so an aide could work without assistance, but the thing swung too much. To reduce its pendulum effect, students added a damper to the arm. They tested it using project engineer Scott Miller ’75 as their patient.

“Before adding the damper we did some physical modeling to calculate the damping coefficient. And, I did an animation,” explained Jiaying Yu ’17, as Miller swung more or less depending on the damper’s setting. “By adding the damper, the motion is decreasing.”

The team working on David Whalen’s gripper, meanwhile, was confident it would now work better and be easier to use. “The biggest hurdle now is getting ready to do the presentation and write-up,” says Connolly. “If this is a product you want to see used commercially, you have to be able to present it.”

Jeffrey Moss ’07 felt good about his first report for the Design Lab project. A challenge from GE, he was surprised, then, by the feedback.

“Things were crossed out all over the place, and Scott tore it apart,” recalls Moss, referring to Miller. “I was frustrated and defensive. But that made me a lot more careful.”

Moss, who studied mechanical engineering, hadn’t always been clear on how he would use the theory and equations he had learned in other engineering classes. But that changed his senior year in the Design Lab. GE asked his team to improve how it calibrates a steam flow velocity probe. The group worked on a simulated steam turbine setup in the Design Lab. He was hooked.

“It’s always the case that some people in a group work harder than others,” recalls Moss, now 31. “But I didn’t care because I was so excited by the work that I was happy to do more.”

The experience helped convince him to remain at Rensselaer for a graduate degree and pursue manufacturing. Today, he owns Empire Dynamics Machinery, LLC, a manufacturing and engineering firm that works with aerospace, rail, and automotive manufacturers in the United States and overseas. Moss says that it was both the hands-on challenge and his shortcomings, including that first report, that had made his Design Lab experience come to life.

“I remember we got pretty distracted by all the alternative methods for doing the calibrations,” he notes. “In the real world,
“RENSSELAER IS UNIQUE IN ITS MULTIDISCIPLINARY CAPSTONE APPROACH AND THE USE OF FULL-TIME PROJECT ENGINEERS TO COACH THE PROJECT TEAMS.”

KATHRYN DANNEMANN '80

Each semester approximately 200 seniors from across engineering disciplines—60 percent of all engineering students—take the required three-credit Design Lab capstone course.
you have to keep your eye on the target; you have to answer the engineering problem.”

Miller, a mechanical engineer who has worked for GE, insists the students he mentors look beyond the pure engineering to organize their time and work together. Frequently, they experience a steep learning curve.

“I don’t think they always believe us when we tell them ‘you have to document your findings, justify your engineering, and speak clearly to a client,’” says the project engineer. “In the commercial world you have to do it all, and our students need to know this.”

The Design Lab doesn’t only help prepare future engineers. GE, Raytheon, Corning, and a host of other industry sponsors benefit by having students make their products and systems more efficient.

“Our sponsors expect results and they come back again and again because they get them,” says Junichi Kanai ’83, professor of practice and associate director of the Design Lab. The work can also mean not finding answers. “We have had companies say ‘thank you for helping us avoid investing $3 million on a technical solution that didn’t work.’”

In recent years, Boeing has asked the Design Lab to develop a robotic system to improve the manufacture and maintenance of airplanes. Philips assigned a team to figure out why it is harder to manufacture MRI magnets in summer months. Raytheon requested assistance reducing the cost of circuit board assembly.
NASA/JPL has partnered with the MDL to mature multiple CubeSat technologies.

“The Design Lab may also investigate a new idea to determine if it’s technically possible,” adds project engineer Aren Paster ’96. “Or, we bring a design from the ‘back of a napkin’ to a fully fleshed-out detailed design with blueprints to hand over to a manufacturer.”

An entrepreneur and former resident from drought-stricken California, for example, once asked if it was possible to create a water-conserving bath toy. Students designed a bubble-shaped device that circulates water, and built a prototype the sponsor will now bring to inventor and toy shows, with the hope of licensing it or finding venture capitalists to manufacture it.

Perhaps most unique, the Design Lab invites engineering students to glimpse the lives of individuals with disabilities, which requires students to consider human factors in their engineering designs.

The Northeastern Association of the Blind at Albany (NABA), which derives a large share of its income by employing individuals who are blind to produce items for the government, has relied on the Rensselaer program.

“They’ve brought us engineering solutions, software solutions, and workflow solutions,” says NABA President Christopher Burke. “They’ve increased our ability to employ people who are blind and increased our bottom line by creating efficiencies.”

Students once devised tools that enabled visually impaired workers to make neck tabs for military uniforms. Last year, they were asked to help people who are blind sew zippers into highway-worker safety vests. They did it, designing a clip workers use to guide the zipper to line up under the sewing machine needle.

“The students spend a lot of time here,” says Burke. “Part of what we like about the program is exposing them to people they might otherwise never have contact with.”

Some Design Lab students, like Christina Pacifico ’14, pay it forward. Working with the Center for Disability Services, her team made an electric toothbrush for individuals who have difficulty putting things in their mouths. The toothbrush, which earned a patent, fits like a retainer and vibrates so users can clean their teeth quickly with little movement. Pacifico, a mechanical engineering major, had thrived on her hands-on experiences at Rensselaer, most notably manufacturing a hybrid race car. The Design Lab added a different dimension.

“It was something the car couldn’t give me or my teaching assistantship couldn’t have given me,” she says. “It was real-life action in the real world.”

Last year she returned to the Design Lab—as a GE manufacturing engineer with a problem to solve. She asked students to improve the process used to remove encapsulation materials from a cured generator stator bar. To do this, operators used knives, leading to cuts and extensive clean up. The students designed a cleaner and safer alternative, a pull tab that peels the material off.

“They came here a few times and became passionate about the project,” says Pacifico, who recently moved on to become an equipment engineer for Tesla. “And, their presentation blew us away. I was very proud of RPI.”

AFTER THE GRIPPER TEAM HAD COMPLETED ITS PRESENTATION AND GONE THROUGH RIGOROUS QUESTIONING FROM THE PROJECT AND CHIEF ENGINEERS, DAVID WHALEN WEIGHED IN.

“I just want to say thank you. The amount of work you did was absolutely tremendous,” said Whalen, who joked that he feared he’d eat too much ice cream once he is able to serve himself. “It will be so great to grab something out of a cabinet, get something to drink, or use the microwave myself for the first time in more than 30 years.”

A lawyer with New York’s court system, Whalen became paralyzed from the waist down in the skiing accident that also robbed him of most of the use of his arms and hands. He has devoted himself to allowing others to study his physical limitations in hopes of developing technical solutions for himself and others.

This was the fifth Design Lab team to work with him. Previous groups had devised a docking station the gripper locks into as the battery charges. They replaced a tube Whalen could breathe into to open the gripper arms with a voice-activated control.

Now, students had made the docking station pivot and replaced the arm braces Whalen has used for 37 years with 3-D printed, skin-toned braces custom-matched to his arms. They built in slots he could use to hold a spoon for the ice cream he could reach.

Whalen expected to try out the system over the summer. A new team of students will resume work in the fall.

Looking on was Daniel Avery Nisbet ’17, a biomedical engineering student who had worked on the project in the fall 2016 semester to improve the design.

“It’s great to see three months later how they took what we did and saw things we never thought of and made improvements,” he says.

“And,” adds Connolly, from the spring semester team, “someone will come along next semester and think of something we didn’t think of and make it so much better.”

FOR FURTHER INFORMATION ON THE DESIGN LAB, CONTACT KATHRYN DANNEMANN AT: DANNEK2@RPI.EDU OR (518) 276-8293
BUILDING A BETTER SOUND
Rensselaer’s renowned graduate program in architectural acoustics brings together practitioners and scholars to study how to design spaces with optimal acoustics.

BY JANE GOTTLIEB

Alex Case ’03 discovered he was a “reverb junkie” as a child when he listened to his grandmother play her Hammond electric organ and became intrigued by how the chords lingered before fading. His fascination with sound continued as he sang in his high school choir, earned degrees in mechanical engineering and music production, and pursued a career in recording. Still, it wasn’t enough.

“I didn’t want to just use a microphone. I wanted to get closer to the engineering side of acoustics,” Case says.

Anne Guthrie ’08 also followed her childhood passion for playing and hearing music, to a music degree and job managing a contemporary-music orchestra. She soon noticed how the same program sounded markedly different in different venues. “I wanted to learn more about the science of acoustics, to understand why the space had such an impact on the music,” Guthrie recalls.

And Benjamin Markham ’08, also a musician, studied structural engineering in college, only to realize he was most interested in applying science to sound.

“I wanted to delve into a detailed study of acoustics,” Markham says. “I thought acoustics was this very interesting marriage between engineering, architecture, and music.”

All three found answers, and a community of individuals with a deep appreciation for the properties and possibilities of sound, in Rensselaer’s graduate program in architectural acoustics. Housed in the School of Architecture and affiliated with the School of Engineering, the program brings together practitioners and scholars from many fields to study how to design spaces with optimal acoustics.

Rensselaer’s program is among the largest and most comprehensive of its kind. The director, Ning Xiang, notes that there is no equivalent in North America—at a time when designing buildings that maximize sound quality is gaining prominence.

“If you look around, you will see acoustics programs, but not many devoted to ‘architectural acoustics,’” says Xiang, editor of the recently published Architectural Acoustics Handbook, and among just 16 individuals worldwide to win the Wallace Clement Sabine Medal, the field’s top honor.

“Over the past 30 years,” he adds, “the need to understand acoustics is more profound than ever. As we have more sound and understand how to control and improve the sound, we are making a real difference in society.”

Close to 20 years after introducing the program, Rensselaer has educated more than 130 specialists who collaborate on concert halls, libraries, airports, corporate headquarters, and university.
venues. Rensselaer graduates also help boost the productivity of people in health-care, education, and workplace settings by assuring they hear the critical information—and not the unwelcome, distracting noises.

The students, many of them accomplished musicians, have backgrounds in engineering, architecture, physics, computer science, and recording engineering. They may choose a one-year master’s degree or pursue a Ph.D.—a pathway to industry as well as research. All leave with an expertise that is in great demand.

“What I’m most proud of is that our graduates find jobs in an area they love that is meaningful,” says Jonas Braasch, an associate professor of architecture who has doctorates in both musicology and electrical engineering. “They are able to do what they want without giving up their passion for music. And they have a job that is useful for society.”

At Rensselaer, Case, who earned his master’s in 2003, delved into the process of making music, from composition to performing, recording, and listening. He immersed himself in understanding the modifications, obfuscations, distortions, and delays that shape sound in any space.

Today, Case is an associate professor of sound recording at the University of Massachusetts Lowell. He presents widely on the future of recorded music as digital technology advances.

“In the next five or 10 years I think we’ll see processes that are mind-blowing,” says Case, recently elected president of the Audio Engineering Society. “We’ll be able to use the recording studio not just to record, but as an ever-more-capable musical instrument.”

Guthrie, who wanted to deepen her theoretical understanding of acoustics, remained for her Ph.D., devoting her dissertation to how a musician’s perception of sound onstage affects the performance.

Today, Guthrie is an acoustics and audiovisual consultant at Arup, a global engineering, planning, design, and consulting firm. Recently, she worked on the acoustical and audiovisual design of an opera theater at the new Stavros Niarchos Foundation Cultural Center in Athens, Greece. And she advised on sound isolation during renovations to the historic Cincinnati Union Terminal. Guthrie also works on schools.

“If you’re in a classroom with a lot of reverberation and not a lot of absorbing materials, the sound is muddy and it’s hard to learn,” says Guthrie. “When we improve the quality, it feels really good because we are improving lives.”

Markham came to Rensselaer after graduating from Princeton and joining Acentech, a leading acoustical consulting firm. He focused on computer modeling sound, earning his master’s in architectural acoustics in 2008.

Markham now heads Acentech’s architectural acoustics group. His projects have included the Barker Engineering Library at MIT, the Museum of Fine Arts in Boston, and the Peter B. Lewis Science Library at Princeton. He relies on computer modeling to show architects and building users the acoustical implications of various decisions.

“If an architect can put on goggles and turn his head and see a 3-D simulation, why shouldn’t we be able to have the same experience with how a room will sound?” he says. “RPI is one of a small number of programs pushing the boundaries at an academic level of what is possible.”

Historically, in the United States, concerns about sound quality were left to composers, who wrote works to suit a given venue. That changed—and the field known as architectural acoustics was recognized—in the late 19th century, after Wallace Clement Sabine, a young Harvard physics professor, was assigned to turn around the abysmal acoustics of the university’s Fogg Lecture Hall.

Sabine conducted experiments comparing the hall to a theater with excellent sound. He timed sound decay, with and without rugs and seat cushions. Sabine ultimately devised a formula, still used today, establishing a relationship between reverberation time, room volume, and surface absorption. He added absorbing materials and improved sound clarity at the Fogg Lecture Hall.

Sabine gained fame as acoustical consultant for Boston’s Symphony Hall and a dean at Harvard. Students began earning Ph.D.s in acoustics, and universities, including Rensselaer, introduced courses in noise control.

Rensselaer’s graduate architectural acoustics program was introduced by Christopher Jaffe ’49, a chemical engineering major. Jaffe became an acclaimed acoustician and inventor—and Wallace Clement Sabine Medal winner—whose projects included...
Anne Guthrie ’08, an acoustics and audiovisual consultant at Arup, measures sound transmission loss through the façade at the Cincinnati Union Terminal project.

Benjamin Markham ’08 is director of Acentech’s Architectural Acoustics group. Projects involve architectural acoustics, mechanical systems noise and vibration control, and environmental acoustics consulting.
the Tokyo International Forum, Hollywood Bowl, and Radio City Music Hall. Always proud of Rensselaer, he believed it was a natural home for the comprehensive study of his field. Jaffe went further, leveraging his involvement in distinguished projects to benefit students.

Among them was Jason Summers ’00. After earning a master’s in physics at Rensselaer, Summers pursued a Ph.D. under Jaffe. He devoted his dissertation to Jaffe’s acclaimed work on the $65 million Bass Performance Hall in Fort Worth, Texas. Jaffe not only shared his technical plans, he lined up funding so Summers and other students could travel to Texas to study the hall.

“Once, in the middle of an Emanuel Ax concert, he went on stage at intermission and told jokes, and then told the audience we were going to make a loud whooping sound (from the acoustical tools),” recalls Summers, today chief scientist at ARiA specializing in acoustics of the air and ocean. “He had to get an entire audience completely quiet so we could run out with microphones and take measurements. No one could cough or laugh while we did our work. That’s the kind of person he was.”

Under Jaffe, Rensselaer introduced an architectural acoustics certificate in 1998. The following year, the graduate program was established. Jaffe remained integral to the program until his death in 2013. Xiang, who worked in binaural noise evaluation and acoustic detection and completed his Ph.D. in architectural acoustics in Germany, was named program director in 2005.

By then, the science that focused on building a better concert hall had greatly expanded. There was a growing understanding of how to measure, simulate, and manipulate interior sound—and there was simply more of it.

“In architectural acoustics, we are dealing with two sides: the
beauty of the sound and the ugly of the sound,” notes Xiang. “Back in the 1960s, noise level averaged 60 or 70 decibels. Now one finds easily 90 or even 100. You have to get rid of the ugly side of the sound if you’re near a highway or an industrial operation, where a lot of activities are.”

The built environment remains largely steered by architects, but Xiang and others see increasing demand for acousticians with architectural expertise. They point to the impressive arenas and opera houses that gain notoriety for their terrible acoustics. Also, as scientists master the physics of sound, research increasingly points to the therapeutic value of quiet, restful hospital rooms, operating rooms where all parties can hear, and classrooms in which teachers’ voices are clear to the back row.

Today, acousticians use computer models to simulate sound with great accuracy. They measure it in every corner to prevent echo or dead zones. They can recommend how far to go to control noise levels, and how much quiet might be too much. Recording studios can block all outside sound and distribute it inside as needed.

Noise-absorbing materials are improving. Xiang has developed methods that broaden absorbing ranges and is advancing a new generation of micro-perforated absorbers that can be easily disinfected—of particular importance in hospitals. He and research partners have invented wallboards incorporating light-weight, low-cost aerogel materials that reduce sound transmission loss.

And architectural acousticians are adapting to vast changes in technology.

“We’re not using stereos anymore. We are using our i-Pods and smartphones. The Internet has become a new ‘room’,” notes Braasch. “We have to assess sound over these virtual spaces.”

Rensselaer students use computer-aided design to simulate sound. They examine how it propagates and behaves in various settings. They can treat a room to suit specific needs.

Just as important, they learn psychoacoustics—how humans perceive sound. Among other things, students study the auditory system. Braasch and his students are using a National Science Foundation grant to research how the brain decodes sound.

Aditya Alamuru ’11, an acoustics consultant in Mumbai, India, and California, who produces electronic music, says psychoacoustics was the most interesting part of the program. Specifically, Alamuru says he has benefited from understanding how to create well-balanced sound spaces. Braasch says this is precisely the goal.

“The technical solutions mean nothing if we don’t see how humans react to them,” he says. “Most programs focus on the technical side or the perception side of sound. We do both.”

One graduate is Matthew Azevedo ’11, who left the recording world when CDs were on the decline. He is now a staff scientist at Acentech, who has won acclaim for using acoustic modeling to recreate John Donne’s 1622 Gunpowder Day sermon at London’s St. Paul’s Cathedral.

“He was one of the best listeners I have ever met in my life,” recalls Braasch.

Another graduate is Elizabeth Teret ’15, an accomplished musical instrument builder who devoted a class project to how the Stradivarius violin would have sounded in the studio where it was built. Braasch says the project hinged in part on her knowledge of instruments of the day and spaces in which the master would have worked. Teret is now an assistant professor at the Berklee College of Music who teaches architectural acoustics.

Braasch says students routinely enter the program with an expertise that far surpasses others, including the professors. “You have to accept that people come in with a lot of knowledge,” he says. “It’s very exciting. We learn a lot.”

Cameron Fackler ’10, who studied physics as a Rensselaer undergraduate, went on to earn a Ph.D. in architectural acoustics in 2014. He devoted his dissertation to evaluating various sound absorbing materials in hopes of advancing products that would look better and be easier to sterilize.

“One of the things I really liked was the opportunity to work with people with such a wide range of backgrounds and experiences that were all related to acoustics,” says Fackler, an acoustical engineer at 3M who develops hearing protection products. “We were all together to learn a topic we cared about and got to contribute our own little niche.”

Rensselaer graduates are now represented in every influential acoustics consulting firm, and they expect to see one another at conferences and association meetings worldwide. For all the hard science they have learned, they sometimes speak with wonder about their work.

Markham, for example, has made acoustical modifications to classrooms in the Boston area to support students with cochlear implants. They now have the same opportunity to learn and thrive as their classmates, he notes. At Washington University in St. Louis, Markham and his colleagues consulted on a building with a lecture hall sunken into a five-story atrium—applying the computer modeling he learned at Rensselaer.

“It could have been a disaster,” he says. “But the simulation we created helps the team understand the importance of the acoustical treatment and evaluate the efficacy of various design options. More important, it helped users understand the nature of the space they would be getting. And, they’re thrilled. The room works very well for the wide range of functions it hosts.”

Guthrie was recently touched by the feedback from a concert musician in Greece.

“I had a cellist say, ‘I’ve played in spaces all over the world and this is one of the few places where I can clearly hear musicians from across the pit,’” she says, referring to her work on the Stavros Niarchos center. “It was such a cool moment, to have someone say that.”
The co-terminal program at Rensselaer allows students to complete their B.S. and M.S. degrees in fewer years and at less cost.
Elliott Smith ’15 attended an on-campus hiring event in his junior year and expected to land a job interview or two. Instead, Smith landed some sage advice from a recruiter. The recruiter, from Johnson & Johnson, told the computer science undergraduate that his technical education was impressive, but it lacked the business components to position him as a competitive candidate. “I was at a loss when they said they wanted a business background. I knew then that I needed something to set me apart from the other candidates,” Smith says.

During another hiring event, this one in the fall semester of his senior year, Smith approached Johnson & Johnson recruiters again. This time, he’d enrolled in Rensselaer’s co-terminal program and planned to graduate the following spring with a bachelor’s in computer science and a master of business administration.

Rensselaer’s co-terminal program allows qualified undergraduates to complete their bachelor’s degrees within eight semesters for most programs, while maintaining their Rensselaer funding for up to two additional semesters as they pursue a master’s degree. The accelerated master’s program has grown every year since its inception in 2008.

Smith’s second encounter with Johnson & Johnson recruiters yielded an interview the following day. “I told them what happened during the first interview, and that I was currently working toward my MBA. I explained that it was my vision to navigate the spectrum of both the business and tech worlds,” Smith says. He was invited to a second interview two weeks later. More than 140 candidates were vying for 30 positions.

When Johnson & Johnson offered him a job, Smith was in the driver’s seat. With another job offer from General Electric to consider, he planned to research each company thoroughly before making a decision. Each company offered two-year rotational training programs, meaning that Smith could choose his final placement after completing the rotation. Smith, however, wanted to learn more about their company cultures and the career potentials tied to each position. Accessing the Lally School of Management’s extensive alumni network, he spoke with several alumni to get a sense of which program offered the most diverse experiences and opportunities for advancement.

A month later, Smith accepted the position with Johnson & Johnson. “I would not have gotten the job without the co-term program,” says Smith, who now works in IT management as an analyst with Johnson & Johnson’s Enterprise Architecture Group at the company’s IT headquarters in Raritan, New Jersey. His job requires finding solutions for bringing data from all of Johnson & Johnson’s approximately 250 companies into a single location.

THE CO-TERMINAL ADVANTAGE

Rensselaer’s co-terminal program may eliminate a year or more from the traditional path to a master’s degree, thus reducing tuition costs. Undergrads with accelerated schedules can complete their master’s in as little as nine semesters.

Like most co-term students, Smith began his master’s coursework in his senior year. With the average master’s degree requiring up to two years of full-time study, the accelerated program allowed
Smith to reduce his master’s studies by two semesters and save an estimated $50,000 in tuition costs.

“Some students in the program don’t come to Rensselaer with plans to stay on for their master’s, but they decide they need more education to increase their credentials and better position themselves in the job market. They stay with us for their graduate work because they like the experience at Rensselaer, and they want to continue to work with the faculty,” says Connie Grega, director of graduate student services.

Generally, to qualify for co-term, undergrads must have 90 credits in progress (B.Arch must have 101 credits), including AP credits, transfer credits, and credits in progress; a minimum 3.0 GPA; and meet any additional requirements mandated by their individual departments. In all cases, students must apply no later than the first semester of their senior year, but it’s strongly suggested that they begin talking with their undergraduate adviser in their sophomore or junior year.

Some co-terminal students pursue a master’s degree in the same academic discipline, while others take an interdisciplinary approach and pursue a graduate program outside of their undergraduate department.

Many high-profile, high-paying companies have hired Rensselaer co-terminal graduates in recent years, including Bechtel, Bank of America, Cisco, IBM, Ralph Lauren, and Tesla.

**BUILDING ON A BACHELOR’S**

Andrew Eagan ’17 had a clear-cut plan when he enrolled at Rensselaer: to complete a bachelor’s degree in chemical engineering and immediately find a job in his field. A master’s degree was not on his radar. But after deciding in his first year to add a minor in management, Eagan became particularly interested in high-tech entrepreneurship. He was gifted with excellent people and communication skills and wanted to combine those with his chemical engineering background. He knew, though, that without a business degree, the path to a good management position could take several years.

“I knew it was common for engineers to start in a technical role and eventually move to management as they moved along in their careers. I didn’t want to wait that long. The Lally School of Management has a strong co-term program, and I wanted a career path that allowed for project management positions and other entrepreneurial possibilities later in my career,” Eagan says.

With plans to pursue an M.S. in technology commercialization and entrepreneurship, Eagan applied to the co-term program in the fall semester of his senior year. He was accepted for the following semester. Another advantage of the program is an early decision into a graduate program.

Eagan’s graduate work included a solid mix of startup and corporate entrepreneurship courses, and Lally’s mentorship program paired him with an alumnus who offered him a real-world window into the tech industry.

A quick search by Eagan on LinkedIn revealed that his mentor, Doug Grose ’72, is the former CEO of GlobalFoundries, the massive chipmaker located in neighboring Saratoga County. Grose, who is currently CTO of BessTech, a battery energy storage startup in Troy, holds a bachelor’s and master’s in materials engineering, an MBA, and a Ph.D. in materials engineering from Rensselaer.

The two communicated through emails and phone calls, and in the spring of Eagan’s fifth year, Grose met with Eagan during a campus visit. Grose then forwarded Eagan’s resume to a former colleague at GlobalFoundries.

In August of this year, two months after his Rensselaer graduation, Eagan started as a program management engineer at GlobalFoundries. After completing a two-year rotation designed to expose him to a mix of positions, he expects to settle into a permanent role in the company’s Program Management Office.

“I couldn’t have hoped for a better job right out of college. Lally gave me an incredible opportunity to expand my network and meet influential people. Plus, there are so many brilliant professors and classmates at the graduate level. Rensselaer provided me with a perfect marriage of technical skills and managerial acumen. I couldn’t have done it without the co-term experience,” Eagan says.

**GAINING MOMENTUM**

Many colleges offer co-terminal programs, but Rensselaer is among the few institutions in the country that provide their accelerated master’s students with financial support. Participation in co-term increased 60 percent between 2013 and 2016, with more than 350 students enrolling during the fall and spring semesters of 2016-17.

Stanley Dunn, vice provost and dean of graduate education, says there are several reasons for
the growing popularity of the institution’s co-term program. First, increasing numbers of students are enrolling as freshmen with advanced placement credits, an advantage that allows them to accelerate their bachelor’s coursework, incorporate graduate courses into their undergraduate schedule, and complete an M.S. much more quickly.

There are also the additional two semesters of Rensselaer funding and the comfort of earning their master’s degrees in familiar surroundings.

“Because they know the campus and the faculty, they can focus on the higher level of coursework. Typically, if students go to a new school for a graduate degree, a certain amount of time is spent adjusting to the campus. This makes their first semester or first year difficult. Rensselaer students who enroll in co-term can focus on their coursework and research projects, since they know the campus already,” says Dunn.

In addition to the minimum co-terminal program requirements, each department has its own set of minimum requirements. Some departments, for example, require GPAs higher than 3.0, resumes, and/or department-specific recommendation letters. Some impose earlier deadlines because their committees need time to review the applications. Co-term students, regardless of department, may be eligible to extend their Rensselaer funding for up to two semesters and apply for graduate federal financial aid.

“I think the co-term program grows as more students and faculty become aware of the program and its benefits,” Dunn says. “The Office of Graduate Education has been focused on providing information sessions, and we are reaching new students all the time. I also believe that as more students enroll at Rensselaer with advanced placement credits, they see they are able to complete an M.S. without much extra time.”

Students who make early decisions about the program are better positioned to plan their coursework and begin their graduate studies as early as possible.

“If students are comparing institutions as undergrads, even if they don’t have immediate plans for a graduate degree, both they and their parents appreciate knowing they can stay on here as a graduate student. Departments are doing a really good job of appealing to students early in their education, so that students can plan accordingly,” Grega says.

**A PATH WITH AN IMPRESSIVE FUTURE**

This is the path Elizabeth Selkis ’17 traveled as part of her Rensselaer experience. After graduating in May with a bachelor’s degree in mechanical engineering, Selkis planned to find a job in her field, with the possibility of securing a job at the Naval Nuclear Laboratory (NNL). Selkis had interned for consecutive summer semesters at NNL in nearby Niskayuna in Schenectady County, most recently as a member of one of the company’s thermal design groups.

While scouting some on-campus research opportunities in her junior year, Selkis had a change of heart when one of her instructors, Diana-Andra Borca-Tasciuc—associate professor of mechanical, aerospace, and nuclear engineering—suggested the co-terminal program.

“It wasn’t part of my plan to stay on at Rensselaer for my master’s. But her encouragement and motivation really made me think. Ultimately, it was a good idea to continue on for my master’s rather than try to do my graduate work part-time while working full-time,” Selkis says.

Selkis plans to earn her master’s in mechanical engineering in December 2017, just nine semesters after enrolling as a freshman. With a background rooted in heat transfer and thermal hydraulics, she plans to pursue a career as a thermal engineer that will also incorporate her design capabilities.

Describing the shift from undergrad to grad student as “seamless,” Selkis says she appreciated the familiarity and continuity that came from having some of the same professors for her graduate classes.

“It was an easy transition. Another nice bonus was not having to take the Graduate Record Exam (GRE),” Selkis says of the standardized, labor-intensive test that graduate schools typically require for admission. Most of Rensselaer’s departments don’t require GREs as part of their co-terminal applications because they can assess the applicants based on their undergraduate work, even when the student is doing his or her graduate work in another department.

Smith, the IT analyst at Johnson & Johnson, says his investment in co-term translated to money and time well spent.

“I’m always looking at the best way to get the best return on my investment,” says Smith. “If you want to set yourself apart from the other students—co-term is definitely the way to go.”

**ELLIOTT SMITH ’15**

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Alumni Reception at AIPLA. Marriott Wardman Park, Washington, D.C. Network with Rensselaer graduates in the patent law and licensing fields. For more information, contact Susan Haight at haighs@rpi.edu or (518) 276-6042.

Alumnae Reception at the Society of Women Engineers Conference. JW Marriott, Austin, Texas. For more information, contact Susan Haight at haighs@rpi.edu or (518) 276-6042.

Alumni Reception at ArchitectureBoston Expo (ABX) 2017. This exclusive reception for Rensselaer alumni will be held at the Boston Convention Center. Contact Kaitlyn Lounsbury ‘15 at lounsk2@rpi.edu or (518) 276-4132.

RPI Men’s Hockey in the Friendship Four Tournament, Belfast, Ireland. All Engineers hockey fans are invited to join the team for the Friendship Four Hockey Tournament in Belfast, Northern Ireland, also featuring Clarkson, Providence College, and the University of Maine. A special tour package has been designed for the Rensselaer community, departing Nov. 19 and returning Nov. 26. Contact Peter Pedone at pedonp@rpi.edu or (518) 276-6061.
2017 Inductees Announced

Conceived in 1995, the Rensselaer Alumni Hall of Fame was created to honor the past while celebrating all generations of Rensselaer pioneers. Three new members have been selected for induction this year, bringing the total membership to 82. They are:

Alfred P. Boller, Class of 1861, greatly advanced the art of bridge design and construction in America following the Civil War. He pioneered in the development of swing bridges and designed many of the largest bridges in the country in his time.

Harry H. Rousseau, Class of 1891, was appointed by President Theodore Roosevelt to serve as a member of the Isthmian Canal Commission in 1907. He was one of the leaders in the construction and early management of the Panama Canal.

Wesley A. Brown, Class of 1951, broke the color barrier at the U.S. Naval Academy, becoming its first African-American graduate in 1949 and paving the way for all who followed in his footsteps. He continued his education at Rensselaer and served 20 years in the Navy Civil Engineer Corps.

For more on the Rensselaer Alumni Hall of Fame, and to see a list of all the members and their accomplishments, visit rpi.edu/rahof.

RAA Announces 2017 Award Winners

In tribute to their outstanding commitment to the Institute and their fellow alumni, the Rensselaer Alumni Association (RAA) has recognized an outstanding group of volunteers with the 2017 RAA Awards.

Rensselaer’s past chair of the Board of Trustees, Arthur Gajarsa ’62, was chosen to receive the Distinguished Service Award (DSA), the highest award presented by the RAA. The DSA recognizes “distinguished service by alumni or friends to Rensselaer, to a profession, to the nation, or to humanity.” Gajarsa was selected, in part, for his outstanding service to Rensselaer on the Board of Trustees, as a member since 1994 and as chair from 2010 to 2016.

For more information on the RAA Awards Program, visit alumni.rpi.edu/RAA Awards.

2017 RAA Award Winners

Distinguished Service Award
Arthur Gajarsa ’62

Alumni Key Award
Hannah Boykins ’07
Kobie Boykins ’96
Christopher Dayton ’01
David Ho ’86
Linda Ptzl Jojo ’87, ’92G
John Leahy ’01G
Mechelle Norton ’78G
Diane Updegrove ’84
Kevin Updegrove ’83, ’85G

RAA Red & White Emerging Leader Award
Gavin Allcorn ’19
Laurel Dean ’18
Connor Hart ’18

Director’s Award
Megan Banko ’12
Mark Beshears P ’16
Mary Beshears P ’16
Trevor Nicholas ’93
Robert Sobkowich ’12
Frank Tantillo ’78G
Michael Zawack ’11

RAA Teaching Award
Shayla Sawyer Armand ’06 Ph.D.

Alumni Admissions Recognition of Excellence Award
Annabel Mendez ’02

Chapter Special Recognition Award
The Rensselaer Alumni Chapter of Atlanta
Trevor Nicholas ’93, President

Craig W. Angell ’35
Chapter of the Year Award
The Rensselaer Alumni Chapter of Hartford
John Leahy ’01G, President

Alumni Key Award winners are chosen to receive the Distinguished Service Award (DSA), the highest award presented by the RAA.

RAA Announces 2017 Award Winners
—1944—

With sadness we report that Mac Schetky died Feb. 14, 2017. L. McDonald Schetky was a metallurgist who spent 10 years in precision instruments, 20 years in copper technology, and more than 10 years in product development, most recently as chief scientist at Merny Corp. He enjoyed sailing his 40-foot ketch from the Chesapeake to Nova Scotia, and after 45 years of home ownership, designed and built his dream home. Mac served as class correspondent from 1989 to 1996, and returned to the "job" in 2012. He will be missed.

—1945—

We had a little over 300 names and addresses for the 50th Reunion and over 100 made it to the 50th. We are now moving toward our 75th in 2020! My new listing of the Class of '45 has 144 names; 81 have no mailing address, 39 have a mailing address only, and 24 have mailing and email addresses. The 63 were contacted about sending in their career story for these notes. I heard from one or two that had recently contributed their career stories, but nothing else. Thus I had nothing to send in for this issue of the magazine!

I realize every morning that we are not getting younger and things aren't working like they used to, but I also realize that our class story is not complete without the stories from the rest of the class. Take a little bit of your time and energy, along with the assistance of people close to you, to put together your career story and send it along to me (asburyh@aol.com) to keep the Class of '45 shining brightly in the future Class Notes. Other events in your life are also quite welcome too!

A note for you to give some thought to your experience. Near the bottom of the Rensselaer icon on your ring, or on some of the Rensselaer printed material, you will find the RPI motto “Knowledge & Thoroughness.” As you should expect from RPI, and as I have thought about my own career and read the career stories, I realized that our class story is not complete without the stories from the rest of the class. Take a little bit of your time and energy, along with the assistance of people close to you, to put together your career story and send it along to me (asburyh@aol.com) to keep the Class of '45 shining brightly in the future Class Notes. Other events in your life are also quite welcome too!

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—1949—

Fred Grob has decided to step down as class correspondent. Many thanks to Fred for his service. If you have news to share, or would like to serve as class correspondent, contact Meg Gallien, alumni news editor, at galliem@rpi.edu.

—1950—

"You've got (no) mail," has been the Inbox story. I'll try "pretty please" in my plea to you for news.

In that absence I have been encouraged to restore a sea story that was excised for space last time. That was relative to the NROTC 75th anniversary celebration on campus (the post-WWII NROTC program proposed by Admiral Holloway) covered there. I wrote: To insert a bit of NROTC trivia; it was my luck to get to know ADM Holloway's daughter Jean. She was the wife of the executive officer of my first fighter squadron, VF-61, NAS Oceana VA. I saw her last in 2002 at the 60-year celebration of the establishment of the "Jolly Rogers" banner which had proudly passed from squadron to squadron when a current holder was disbanded. Jean's husband, RADM Lawrence Hayworth, had died only two weeks earlier. I reminded her of the fact that her father had put me through college. Her brother had become a four-star like their dad.

I mentioned last time that Dick Powell (Arch) and I served together in USS New Jersey off Korea. What I left out was that we both graduated late, January 1951. Commissioning held us up. We did not share our troubles with the NROTC program until 40 years later. Two lieutenant instructors teamed up to write each of us up as not being team players. We were too prominent on campus while ignoring unit extracurricular activities. 

Dick went straight to the ship and suffered a couple months of intensive day-and-night training at Gitmo, the Underway Training Command. Anticipating flight training, I took advance leave, reaching the "boat" the evening before its return to Norfolk. Within three weeks, I avoided assignment to engine and boiler rooms, not that kind of engineer, got Ops Department and arranged collateral duties as photographic and cruise book officer. I never stood inspection, enjoyed lots of helicopter flights and "working-hours" with camera ashore in Japan when in port. Dick said that he emulated those moves in his next ship. Prior to our return stateside the executive officer who set all this up was transferred. At his going-away party in Yokosuka, "Poison Charlie" sat, put his arm around me, and said: "Pfeiff, I like you. You are the only officer in this ship who isn't scared stiff of me. Keep it up!"

One of the officers who wrote me up was the aviator. An incredible coincidence had us shoulder to shoulder after I earned my wings. At a duty officer's desk we were having our flight plans signed off. Each flying the twin-Beech SNB. I was headed to jet fighter transition, he back to his desk. He was doing black-shoe duty on a subsequent encounter in the Med. I flying fighters, as later, serving together aboard Intrepid with him flying tankers. He got to wish me good luck at test pilot training. Sweet! —Robert L. Pfeiff '50, vinctrowes@aol.com

—1951—

We received a news clipping about Robert Vandenminden. His company, Telescope Casual Furniture, recently celebrated his 65 years of dedicated service. While a student at RPI, he redesigned the company's iconic director's chair to have a removable seat and back, enabling customers to easily customize and change the colors. The chair exploded in popularity. When 100 of the world's best designers and architects were asked to pick the best 100 designed products in the world, the 47th item they picked was the Telescope director's chair. His designs helped win many awards over the years, and in 2011, the International Casual Furnishings Association awarded him the Lifetime Achievement Award.

Bob Fopeano sent out the annual report of the class to those who have email addresses. He writes: "Briefly, instead of giving the school a clock or something, we contributed approximately $650,000 to fund three initiatives: 1) to provide scholarship support for students coming in at the secondary level primarily from community colleges, 2) to award a faculty member who demonstrated innovative teaching methods, and 3) to award entrepreneurial activities. Over the years our class has been featured at the Celebration of Support where the Class of 1951 Scholarship is awarded, the Faculty Recognition Dinner where the Class of 1951 Teacher Award is presented, and at the
Mike O'Brien, son of James O'Brien '49, who passed away in April, sent this photo his dad had taken of Phi Kappa Theta brothers in the late 1940s. Let us know if you are among those pictured, and send any memories you have of the occasion to alum.mag@rpi.edu.

Lally School’s Change the World entrepreneurial competition where the Class of 1951 Entrepreneurial Awards are made.

“In addition to the benefits it has brought to many students and faculty, the funds we put together for our 50th Reunion, along with continuing contributions, provides our Class of 1951 a continuous presence on the campus and it will continue to do so for years to come. Be proud of your class and what it has meant to your school.”

In April, Bob helped select this year’s winners for the Change The World Challenge and for the Class of 1951 Entrepreneurial Awards. Also in April he attended the Celebration of Support festivities at the Heffner Alumni House. “It’s a nice affair where many student projects are showcased, including a couple of our entrepreneurial award recipients, and so I got to walk with some them and also was able to have a conversation with the winner of this year’s scholarship award.” Bob was planning to represent the class at the Faculty Recognition Dinner in May to hand out our teacher award.

Barbara and Robert Pavan have relocated to 50 Forest at Duke Drive, Durham, NC 27705, (919) 401-2511, e-mail npavan@verizon.net. Wish them well. If you are a golfer, play Durham CC. It’s great. —Fred Williamson ’51; john_f_williamson@comcast.net

—1952—

I was looking forward to seeing many of you at our 65th Reunion. On a sad note, we recently lost two of our classmates: Marvin J. Abrams, B.S. physics, Alpha Epsilon Pi, and Polytechnic news staff; and William F. Payne, B.C.E., Lambda Chi Alpha, Phalanx, varsity hockey, and Grand Marshal.

Bill Payne, who was a prominent early figure in the transformation of New York University into a global force in education, passed away on May 13, 2017.

Two of Bill’s RPI fraternity brothers—Roger Gallihew ’51 and David Krashes ’49—married Bill’s sisters, Joan and Barbara. A third fraternity brother, Pete Easterling ’51, introduced Bill to his sister, Nancy. Nancy and Bill married and spent 28 years together, living in Europe and upstate New York, raising their sons, Todd and Mark, in Summit, N.J., and spending memorable summers at Bill’s favorite place on earth, Forest Lake Park in Grafton, N.Y.

After graduating from RPI, Bill served his country as first officer on a Navy minesweeper, and as an admiral’s attaché in Heidelberg, Germany. In 1958, he joined RPI’s Development Office, beginning an accomplished career in academia that would span four decades. In 1968, he left RPI to help lead a decade of successful revitalization efforts at New York University, serving as senior VP of development and external affairs. He went on to found a consulting firm, Payne, Wester, Forrester & Olsen, lending his experience to many prominent educational institutions, nonprofits, and foundations. Bill married Betty Savage in 1986, and retired to Vero Beach, Fla. Marvin Abrams died on Feb. 19, 2017, after a long illness. After graduating from RPI with a B.S. and M.S. in physics, he spent his early career in the atomic power industry specializing in atomic power plants for submarines. His work earned him a commendation from Admiral Hyman Rickover, the father of the atomic-powered U.S. Navy. He subsequently joined IBM and enjoyed a wide-ranging career from systems engineering to education, world trade, and market research. After retiring from IBM, he taught mathematics and computer science at various local colleges. Marvin also served on the Town of Ramapo Housing Authority for a number of years. He enjoyed jogging, reading books on mathematics and science, and going on long hikes with his dogs.

My wife, Esther, and I celebrated our 60th anniversary on May 11 at the Woodstock (Vt.) Inn. We received a most pleasant surprise at dinner, when the people at the next table (complete strangers) paid for our dinner. It was a memorable two-day experience.

If you have any news, please send it to me as soon as you can. —Harry (Bud) Hovey ’52; bud@wf2b.com

—1953—

65th Reunion: September 2018 The “Great Decisions” course was created by the Foreign Policy Association (FPA) to help inform adults in a non-biased manner on foreign policy. It is offered free at over 1,000 libraries, community centers, and religious institutions nationally. Check FPA.org to find where it may be offered in your community. I have taught this class for several years at Westchester Community College (WCC). This year we studied and viewed
Arthur Goldstein ’53

a DVD on the European Union, World Trade, GEO Politics of Oil, Latin America, and Nuclear Security. The course stimulates your mind and expands your interest!

David McCullough, the superb historical writer, just published a book of his speeches titled The American Spirit. After he wrote The Great Bridge in 1972, he spoke at Rensselaer about the Roeblings, the Brooklyn Bridge, and his research at RPI. In our library, he found letters and papers bound in shoelace that were instrumental in his researching the background of Washington Roebling (CE 1857) and his family. The book is the dramatic story of building the longest suspension bridge at that time. It is a tale of greed, corruption, obstruction, optimism, heroism, and determination. His wife, Emily Warren Roebling, received acclaim years later for her enormous contribution to building the bridge after her husband became incapacitated. The book is a great read. Try it!

Dustin Hoffman, in the movie The Graduate, was advised to seek his fortune in plastics. Many of us have been associated with this field. In a documentary movie, A Plastic Ocean, the indestructibility of many plastics was highlighted. Probably, we as engineers over-designed the plastics field as it is now choking our fish and waterways (unintended consequences). An excellent movie recommended for children and adults (see it on YouTube).

I volunteered to write our alumni column 29 years ago in 1988. I have written over 110 columns and included hundreds of our fellow graduates. We have lived with an amazing number of presidents from Roosevelt to Trump. Can you suggest any good history books that cover our era?

Please send any comments on life, business, school, family, culture, books, movies, or any interests, etc.

—Arthur Goldstein ’53; agscent@aol.com

—1954—

Hal Schindler let us know earlier this year that he was sad to report the passing of his roommate Raymond E. Ruf on Jan. 16, 2017. Ray was founding partner and past president, DMR Associates, a past president of ASHRAE, and a U.S. Air Force veteran.

Andy Pouring sent the following interesting note: As time marches on I feel I must apologize to our classmates for having so little time to attend Class of ’54 functions; my excuse is I am still working full time and a half. After receiving my BME, serving for 2-1/2 years active duty in the Med (was NROTC), marrying a wonderful Barcelona lady, teaching at RPI as an instructor, teaching at Yale as a lecturer, and leaving the U.S. Naval Academy as full professor and department chairman in 1980, I co-founded the company which became Sonex Research. If you happened to see the movie Captain Phillips, you saw the ScanEagle drone with our unique engine in it that saved his life and countless others in Afghanistan, at sea, and other places. That engine and its larger brother in the Blackjack, the only ones allowed on Navy ships due to burning “heavy navy fuels,” enabled Insitu to be acquired by Boeing (with whom we are still working) and grow from a five-man company with revenue of $1 million to an 800-man company with a valuation of over $2 billion. This year, I received two U.S. patents updating that engine design for use in natural gas engines that provide compression for the nation’s pipelines; these two patents form the intellectual backbone of the second company I help found: Radical Combustion Technologies, whose CEO is a former student of mine. I am still active with RCT in their struggle for raising funding. Wishing all fair seas going forward.

Bob Albern and his wife moved into a retirement community in Middlebury, Vt., last August. Says they are almost used to it now. Not as much contact with RPI as they had from Kinderhook, N.Y. Bob particularly misses the plant tours that the RPI Hudson-Mohawk alumni retirees arranged. He would see Steve Ruggles regularly then. —Bob Meyers ’54; btpmeyers@aol.com

—1955—

Keith Beswick recently had his hip replaced. A former RPI varsity diver, he is looking forward to getting back to swimming and diving in his backyard pool. When we spoke he was planning a summer visit to Kauai. “We’ve been to all the Hawaiian Islands, but when we got to Kauai we stopped visiting the others.” Keith also visits his son in Denver and spends time tutoring a grandson in advanced algebra and calculus. How many of us still remember calculus?

Ron Byer lives on the New Jersey shore and in past years was an active sailor and deep sea fisherman. “I had a 24-foot keelboat, but now I’m out of the boating business.” He is now getting back into sailing, helping his two grandsons learn offshore racing. The grandkids are also getting him back into downhill skiing after several years, despite his two knee replacements. Ron and Winnie have traveled very widely in the past, but “I stopped doing most anything. The world doesn’t look so nice. You can’t tell what’s going to happen.” From time to time Ron meets for lunch with Bill Highleyman.

Sam Colvin retired as a manager at Kodak in 1992 after a 37-year career building plants and facilities. “I wasn’t ready. I had nine job offers, but I waited. After a year I saw no reason to continue working and promised myself I wouldn’t do anything for money.” Since then he has made very good use of his time, working on volunteer projects and serving for 25 years as president of the Bay Betterment

Rensselaer/Fall 2017
Association on Lake Ontario. Sam is a four-time commodore at the Fair Haven Yacht Club and still enjoys sailing. “I’ve been through so many generations of crew members. I get whoever is available. I’ve passed the point of being competitive; now it’s just fun.” Sam is the caregiver for his wife, Eleanor, who has MS and uses a walker and wheelchair.

Bernard Gottschalk retired in 2002 as a senior research fellow in physics at Harvard, but he still has an office there and goes in daily. “It’s kind of a historical accident, a courtesy appointment. They move me into places that are not excessively occupied. I can walk to the office; it’s just six blocks from my house.” He publishes occasional articles and referees papers for journals. “I don’t play golf, and I enjoy science.” Bernie recalls that he played the guitar years ago, and “I got really into the folk music crowd. It was the reason I got to Boston. But I lost interest in a year or two.” He now owns a harpsichord and plays it regularly. In his RPI days Bernie roomed with former U.S. Congressman John Olver. They have stayed in touch, and he attended John’s 80th birthday party a few years ago. John had stepped down from his Congressional seat, partly to care for his wife, “Rose has since died. She was a very important academic in her own right.”

Gene Humez still gets out on his tractor to help clean up his 20-acre Oregon property after winter storms. “Some 18-inch trees came down with the winds. Last year I used the chain saw, but I don’t do it anymore.” He also makes his own wines, pinot noir and pinot grigio. “Once in a while I go back to the old-fashioned rhubarb wine.” For years he and Barbara had a winter condo in Baja California but sold it after hurricane problems. “We got out of the habit and never got back.” Gene has been dealing with COPD but has been able to get around well using a lightweight, battery-powered air separator that produces nearly pure oxygen.

Fred “Howie” Morgan taught math and physical science at a private academy until 2011. “I became too creaky.” He has become the caregiver for his wife, who has health issues. The Morgans recently sold their house and moved to an apartment with a good view of the woods near Reading, Pa. Fred keeps in touch with his RPI roommate, Kirk O’Keefe. “I have very fond memories of RPI.”

After his wife died three years ago Kirk O’Keefe decided, with help from yard services and a part-time cook, to stay in his house. “I can live here cheaper than I could in assisted living.” Another motivation was the need to dispose of the collections that Kirk, an author and trophy hunter, had built over the years. “I’ve disposed of the entire collection of firearms except for a few items. I also had 103 trophies in the trophy room, almost all of high quality.” Many dated back to the ‘70s and ‘80s, before regulations requiring paperwork and limiting transport across state lines. “Fortunately I was able, with the help of a lawyer, to generate provenance. There used to be a market for high-end trophies, but that market is gone.” He gave many to Stephen F. Austin State U. and auctioned most of the rest, largely bought by museums in China.

“The rest may have to be put in a pile and burned.” Disposal of his ivory collection has been even more difficult. “There are strong regulations about moving it across state and county lines. Nobody will touch ivory. It has to be crushed.” Kirk does a lot of reading, still does some writing, and is active in his church. On a recent trip he visited Howie Morgan and Jay Hamilton.

Larry Palmer graduated with our class after spending two years at RPI on a “3 and 2” program. “It worked well for me.” He later earned his Ph.D. in EE at the U. of Maryland, worked in the communications satellite business, and retired as chief scientist at Hughes Network Systems. He then taught courses in analog and digital communications before retiring again in 2012. “Driving around the Beltway at 9 p.m. was getting rather tough.” Larry still plays golf, but “my golf buddies are fading.” Happily, his health remains good. “I married a dietician, so maybe that helps.”

Leo Pedlow reports that he is still hale and hearty. He exercises three times a week with the Silver Sneakers, a 55-plus age group. “It’s not too strenuous, but it gets the blood flowing and loosens the joints. Then I go home and take a nap. At my age that’s all you can do.” He and Dorothy love to travel and have been to more than 80 countries, including 15 river cruises and a recent ocean cruise from London to Rome. An amateur enologist, Leo enjoys the Wall Street Journal Wine Club. “I spend a lot and drink a lot.” —John Schmidt ’55, theschmidts2@hotmail.com

I am writing this from sunny Florida where I spend the winter months playing golf, walking with my wife of 58 years, singing in the church choir (with her) and continuing my writings in the area of civil engineering history specializing in bridges and bridge engineers. I am currently involved in the restoration of several 19th-century iron bridges in New York and Florida. I hope you all enjoyed the December ’17 edition. Our 65th Reunion is only four years away. We were in the Class of ’56—1956.

Over the span of a half-century, ERNESTO BLANCO ’56 designed a number of groundbreaking devices that aided the handicapped, including the first stair-climbing wheelchair and an improved Braille typewriter.
water project in Ibadan, Nigeria. In the summer of 1980, I was hired by Hazen and Sawyer and was sent to Egypt, where I managed the improvements of the water systems in Port Said, Ismailia, and Suez for the Suez Canal Authority. Back in the U.S., I did water projects in PA, NJ, and NY and retired in February 1997."

Our Classmate Ernesto Blanco (ME) died recently and MIT (you know, that other engineering school) prepared a nice eulogy, as follows in part: Ernesto E. Blanco, a renowned inventor, mechanical designer, and beloved former professor in MIT’s Department of Mechanical Engineering, passed away on March 21, in Marrieta, Calif. He was 94 years old. Over the span of a half-century, Blanco designed a number of groundbreaking devices that aided the handicapped including the first stair-climbing wheelchair and an improved Braille typewriter. Born in pre-revolutionary Cuba, Blanco began his career as chief draftsman of Havana’s city planning department. In 1949, he left for the United States, where he earned a bachelor’s degree in mechanical engineering from Rensselaer. Blanco briefly returned to Havana to lead the University of Villanova’s mechanical engineering department. In 1960, after the Cuban Revolution, Blanco left every item he owned behind and fled to the United States under the guise of a vacation to visit his American-born wife’s family. Within a week of arriving in the U.S., Blanco was offered an assistant professor position at MIT. In 1964, he temporarily left MIT and accepted a role on the faculty at Tufts University. He then took a five-year hiatus from academia, acting as a textile technology consultant before founding his own company in 1974. However, it wasn’t long before he was back in lecture halls. During his nearly 38 years at MIT, Blanco developed a reputation as a consummate educator who treated every student, faculty, and staff member with the utmost care and respect. He emphasized creativity and analytical rigor in his courses. His compassion and consideration for everyone he encountered, along with his sartorial choices, earned him the affectionate title as “the man in the white lab coat.”

Our classmate Ray Irish (CE) died March 21, 2017. John Noyes sent me his obituary, a part of which is as follows: “After college, Ray was employed by his father as a civil engineer in the family business in Westchester County. He then moved to Glen Falls and spent 20 years with Rist-Frost Associates, eventually becoming a partner in the firm. Ray then worked for himself before retirement.” Ray graduated with the highest GPA among CE graduates and he attended all of the early class reunions.

As noted in the Spring 2017 issue, Ned (Charles Edward) Gulbran Jr. (BArch) and Barry Steinberg (CE) also died recently. Barry practiced civil engineering for 60 years, the last 25 as owner of Steinberg Associates, out of North Haven, Conn. His designs and work may be seen throughout the region. Ned lived and worked as a landscape architect in Seattle, Wash., and his obituary noted he was an outdoorsman, traveler, rower, member of the Swedish Club and of First Church of Christ Scientist, Mercer Island. Keep those emails coming in and don’t forget to check out our website periodically as I will add information as I get it: http://fgriggsjravixsite.com/rpt-class-of-1956. —Frank Griggs ’56, ffgiggsjr@twc.com

You’re receiving this issue just as we are celebrating our 60th Reunion in Troy. As of this writing we have over 80 classmates and over 65 guests with another 30 who are planning on attending. The 1957 Spectrum Award goal is now $100,000; our first student winner has been chosen, with the award presented at our class dinner. As of early May, the fund stands at $66,000, with 49 class donors. You can make your gift online at https://impact.rpi.edu/project/3034. Four or five students from RPI’s Red and White leadership group were to join our Class Dinner and share their experiences today, allowing us to compare ours of the 1950s. The extended weekend promised to be very interesting and exciting!!!

Last February I had the sad pleasure of attending the Jones family’s “Celebration of Bob Jones’s Life” at their retirement community in Riverwoods, N.H. It was a wonderful affair with many people there paying tribute to Bob Jones and his many accomplishments. I had the opportunity to visit with Bob’s wife, Dian, their kids and grandkids ... “chips off that very accomplished block.” Many of Bob’s large and professional photos were prominently displayed and family and the interesting places, adventures, and animals of their life experiences. Bill Gardiner had come down from Maine and Al Stearns and Dick Young flew up from Virginia. Bob was a very active RPI alum and supporter, including significant activity in development, including having established the Dian C. and Robert I. Jones ’57 Scholarship.

John Fisher provided the following: Carl Hoffner, ‘57 graduate from the special Naval Officer Civil Engineering course at RPI, made a $25,000 gift to the ’57 part of the Spectrum Fund, and explained, “I very much wanted to have my class reach the endowment level for the Spectrum Award project.” Carl and his wife have lived in Palo Alto, Calif., since 1970. I also live in Palo Alto and spent several hours with Carl and discovered some surprising things about our classmate.

Carl spent a year at the University of Virginia, transferred to the Naval Academy, graduating in 1953, and received an MBA from Stanford. Notwithstanding those credentials, he credits his 12 months at RPI in the accelerated CEng program for much of his career success in construction and maintenance of military structures. He spent time in Guam, Hawaii, and California, as a naval officer and in the civil service. He noted managing the construction of a special facility in Hawaii for assembling atomic bombs used in testing.

Carl’s dad, also of Annapolis, was away from home
During WWII, Carl took ice-skating lessons to keep his mind off the war. Carl went on to compete in U.S. North American and world championships in pairs and ice dancing from '45 to '50. He and partner Anne Davies placed third in the '49 world pairs event and first in ice dancing in the '46 U.S. Figure Skating Championship. The two placed at least third in one event each of the six years they competed.

Even though Carl spent only 12 months at RPI and was unable to participate in normal class activities because of the rigors of the academic program and his family responsibilities, he feels very much a part of the Class of '57. When asked why he made the gift to the Spectrum Fund, he said he had received so much from Rensselaer he just wanted to give back to the school in a meaningful way.

Carl, thank you for your commitment and generosity to RPI. —J.R., “Buzz” Cambell '57; JRCampbell2@gmail.com

—1958—

60th Reunion: September 2018

I received the following note from Fred W. Hand: “After my bachelor’s degree at RPI, I completed my master’s degree at University of Southern California. I worked at Bendix Corp. and retired in September 1998 from Hughes Aircraft Co. after working on the various Hughes commercial and military satellite programs. Now, at 81, I am residing in the mountains of Southern California in the quaint community of Big Bear Lake. Here we get a touch of snow, but nothing like the winters at Troy.”

Please, send much-needed news! —Jim Augstell '58, augstj@juno.com

—1959—

It’s time to fill my inbox with updates. Please send me a note so that I can share your news in the next issue. —John Lindsay '59; britcards@gmail.com

—1960—

I heard from an old friend Jim Merrick that Henry Nejako died in February. I knew Henry from our days at Rensselaer and especially at Lambda Chi Alpha. He was quite a guy.

A Phalanx member, Henry majored in management engineering (what a quaint name for a major) and then completed a master’s in public administration at Harvard.

Always a loyal Rensselaer guy, Henry was quite different from the slide-rules-toting students. He retired in 2014 after a long career as a transportation expert for the federal government.

After many columns extolling the loyalty of the A E Pi guys, Thanksgiving dinner brought a pleasant surprise. My grandson pledged A E Pi this spring. Connections keep getting stronger.

The Class of 1960 Scholarship Fund is still supporting students. I meet them at the annual party held on campus honoring deserving students. If anyone has any extra money—it’s a good cause. —Bill Blanchfield '60; bblanchfield@hsettlement.com

—1961—

In mid-February, Fred Guimond (Deke) and Bob Bardagy (Chi Phi) had a mini-reunion at Grouse Mountain in Vancouver, BC, Canada, where they were able to ski at night with a beautiful view of the city of Vancouver below (see photo). Bob lives in Victoria, BC, and had great success with Comdisco Leasing. Fred, the indomitable lacrosse player who was the only player from our class on the alumni team at our 50th, played 33 years of lacrosse after college plus 25 years of ice hockey (and he lives in Baton Rouge, hard to believe), but now limits his athletic activities to tennis. His Dekes were thrown off campus in the '60s and Chi Phi shortly thereafter, but have returned today, he is happy to relate. Fred still owns and works at his metal trading business (he didn’t like me calling it a scrap business) where he handles lead, antimony, and arsenic. He recommends it for a profitable and fun business as long as you don’t ingest the product. He and his wife have a summer home on lovely Lake Wenatchee in the Cascades and plan to move there soon.

Merv Lapin, who lives in Vail, Colo., took a break from his extensive real estate management duties to recently tour Australia and New Zealand for three weeks with his wife. With the congestion of skiers, etc., in Vail, Merv now owns a Citation jet plane to more easily get out when he wants to. —Brian McManus ‘61; brian44@skbglobal.net

—1962—

A double entendre: I was living in my rented room on 14th Street during my last two years at RPI and was about to leave for a weekend with a girlfriend who was at school in New Palz. I asked my floormate Lenny whether it was going to rain during the weekend. He asked, “Why?” I said, “Because I want to know whether to take my rubbers.” He replied, “Don’t you always?”

Marvin Easton says that IBM stands for “I’ve Been Moved.” The peripatetic Marv had a 35-year career with IBM, in various marketing, staff, and management positions in the U.S., South Korea, Japan, China, Hungary, Poland, and Romania. He retired in 1993 and was retained as a full-time consultant for four more years in China, Europe, Vietnam, and India. Marv married Barbara Emminger in 1977. (They met in seventh grade—What took him so long to propose?) In 1997, they moved to Naples, Fla. Barbara was NYS Baton Twirling Champion for six consecutive years, World 1 and 2 Baton Champion, and Miss Majorrette of America. Not able to get his ants out of his pants, Marv and Barbara partake of foreign travel annually. They were planning to be in Myanmar (Burma), Cambodia, and North Vietnam during our 55th reunion.

Mary Lou Dickerson emailed me about the death of her husband, William J. Dickerson, on Feb. 12, 2017. A geology major, Bill was an administrative law judge at the NYS Department of Encon. After his retirement, he became an independent consulting geologist and environmental analyst. Bill was with the U.S. Air Force, on active duty in Vietnam and Thailand, followed by 18 years in the reserve. He is survived by his wife, five children, and four grandchildren.

Dr. Thomas Cobb, class of 1966, mailed me news about the death of John R. Craddock (BCE). John received a U.S. Navy ROTC scholarship, subsequently becoming an aviator in the U.S. Navy. Twenty-one years later, he retired from the Navy and worked in marketing and construction in Jacksonville, Fla. John is survived by his wife, Jennelle, two children, and four grandchildren. While at RPI, John was a member of Lambda Chi Alpha.

I just donated $50 to the 50 Year Club. Better late than never. All alumni who graduated from RPI at least 50 years ago are automatically enrolled in the club. I urge our classmates to make their symbolic and very useful $50 donations to this chapter of the Rensselaer Alumni Association, which serves and supports our alumni and students. Our very own John Templin is president. Send your payment to William Blanchfield ’60, treasurer, at 2610 Sunset Ave., Utica, NY 13502. —Jay Winderman ’62; jbwu@earthlink.net

—1963—

55th Reunion: September 2018

I asked Jerry Lenaz if he could recommend a good mystery-themed bookstore. The very best seems to be “Cloak and Dagger” in Princeton, NJ. Sixteen years ago Jerry and especially his wife, Aline, kicked the corporate rat race to open Cloak and Dagger to advance their love for the mystery literature genre. The bookstore stocks over 15,000 titles; something for everyone.

Jerry tells me that “after years of plotting schemes that responded to a client’s needs, I am now selling plots with clues to test the mystery-solving acumen of book readers. Even have a few Rensselaer engineers and architects in my customer base.”

Asked for some recommendations, Jerry thought “that for some mystery authors who would pique an adventurous mind you might try these: Davis Ignatius (espionage, spy thrillers), Christopher Fowler (zany unorthodox crime solver), Peter Lovesey (British police procedural par excellence), and for the cerebral sleuth, try Aaron Elkins (professor of anthropology crime solver in the mold of Sherlock Holmes).”

Visit the website, www.thecloakanddagger.com, and get free shipping. And to think that I don’t even get paid for the plug. What a neat business after a career in architecture. There might even be a murder set in that little college town of Troy, N.Y. It would be fitting…Death at the Approach.

Looking back to 1961, we should remember that RPI won the Sugar Bowl in New Orleans on
December 30 of that year, Dennis Powers led the team of Pierre Henkert, Jim Garrettson, and Jim Brickell to victory in the Sugar Bowl Inter-Collegiate Sailing Championship defeating Tulane, Cornell, Coast Guard Academy, Yale, Lehigh, Michigan State, Ohio State, and Purdue. The sailors scored 138 points in an 18-race series to give the Sailing Club the championship. I remember taking a sail on Saratoga Lake in one of the club's boats with my roommate Robb Frederickson.

Gentlemen, write when you can. I need the copy —Jack Titley '63; ript6@specialops.com

—1964—

Our very own rear admiral (Harold Goldman) wrote to tell me that he and his wife are alive, well, and living the good life—winners in Florida and summers in the Capital Region. He is still working in the tax business, and traveling a bit.

Dan Bae reports that he enjoys hearing news from all our classmates. Now, Dan, time for you to write in and provide some news of your own!

Peter Maier keeps busy babysitting his two grand-children, and taking a senior citizens fitness class (not sure how he got to be a senior citizen). And he has kind words for the folks in Troy—he noted that the latest issue of the alumni magazine is terrific. He actually read it all!

My old buddy Bert Gottenberg wrote in to say how much he enjoyed reading the class postings in the last issue of the Rensselaer magazine about the lunch that I had with Rick Kaplan, and Howie Mandelbaum and Danny Gold. Next, Danny and I are going to make a lunch date with him, notwithstanding that Bert and the TEP brothers tried to rush Danny, but he wound up at AEP instead.

Stay tuned for more news from Bert.

Bob Burns is still living the good life in Florida; he spent the months of January and February in an RV park in Marathon, Florida Keys, where the weather was delightful (for most of the time). And, he also drove cross-country from Florida to India, family keeps him busy with life cycle events, but he still finds time to play in bands and orchestras on clarinet, sax, and flute—which he says is great fun.

Dick Foster wrote in to say that he has been retired for some years now from Black & Veatch Consulting Engineers (water and wastewater projects around the world). He and his wife enjoy traveling and volunteering in his hometown in south central Pennsylvania. Recent travels include two weeks split between Maui and the Big Island of Hawaii this past winter, where he says that the whale watching was fantastic. Last summer, he spent three weeks in South Africa, with a side trip to the mountain kingdom of Lesotho, and he says that staying at a game lodge and condo on the Indian Ocean was really enjoyable. Overall he found South Africa very affordable, easy to get to, and an amazing place to visit.

Bruce Morrissey (B.S. Chem; Ph.D. PChem) writes to say he and Susan (M.S. '69) are enjoying a nice mix of grandkids, travel, art courses, and teaching. Retirement the third time (DuPont, U. Delaware, and consulting) has stuck. There is even time enough to work with the ACLU of Delaware to foster the rights of immigrants. Most interesting, he has discovered the older you get the more respect you have for the wisdom of your RPI teachers: Prof. Hollinger argued “You don’t really understand calculus until you’re 40!” To which Prof. Brown replied “You can’t understand Moby Dick until you are 40!” Bruce does teach “Call Me Ishmael” at the UD Lifelong Learning Institute and has come to appreciate Prof. Brown’s perspective. This fall Bruce will offer the course “Fake News, Con Men, and Group Think” based in part on Prof. Brown and Olmsted’s book The Three Uses of Language, which was required reading in 1960-61 by all freshmen in our class. Ideas do recycle.

Stan Brown says his life, of late, has not been ups and downs, but ins and outs. He joined Rotary, found they did some good things, but didn’t care for the goals and resigned after a year and a half. He started with a class in social media marketing at St. Thomas University, but realized its emphasis has been honored by the University of Louisville Equine Industry Program. Jeff is well known and respected in the New York City real estate industry, and is also a long-standing standardbred horse breeder and owner, and a harness track owner and operator in both New Jersey and New York.

Finally, my five-and-a-half-year term as president of my City College Lifelong Learning Community has ended, and I am truly looking forward to lazier days ahead! —Michael Wellner '64; captmike46@aol.com

—1965—

Mary Esther Parker wrote to advise me of the passing of her husband, Alton Brooks “Bud” Parker Jr., who, while serving in the Air Force, earned an M.S. in management at RPI in 1965. Bud’s 21-year military career included flying more than 100 missions over North Vietnam; assignment as a flight instructor for four years; and serving as the military liaison between the U.S. and Portugal, during which time he had the opportunity to work with Henry Kissinger and Vernon Walters and received special recognition from the White House. After retiring from active duty as a lieutenant colonel, Bud earned a law degree and became an expert in taxation. For the history buffs among you who may note that Bud was the namesake of the Kingston lawyer who ran for president against Theodore Roosevelt in 1904, Mary Esther advised me that there is no relation other than that many southern families named Parker displayed their admiration for the candidate by perpetuating his name. (Bud’s father was born in 1905.)

Mark Salita wrote to fill me in a bit on the past 52 years. He was able to earn his BAE despite playing freshman tennis and varsity lacrosse, clarinet in the band and orchestra, and serving as an officer in his fraternity Pi Lambda Phi. After obtaining an M.S. in aerospace engineering from Penn State and a Ph.D. in fluid mechanics and applied mathematics from the Guggenheim Lab at NYU, Mark worked on gas turbine research at Pratt & Whitney Aircraft in East Hartford. Rather than be transferred to P&W Florida, he accepted an offer from Thiokol Corp. in Utah as staff scientist for the space shuttle solid-propellant boosters. His presentations on booster O-ring erosion to NASA before Challenger and the Presidential Commission after the accident were most memorable. After 16 years with Thiokol and 16 years with TRW/Northrop Grumman, primarily as analyst on the Minute- man program, he retired to Sun Lakes, Ariz., but has continued to consult and lecture from his electronic book Basic Analytical and Numerical Methods for Propulsion and Aerodynamic Analysis of Solid Propellant Rockets (available only to the U.S. government and its contractors). Recently, he has been modeling the Boost Phase Intercept of North Korean ICBMs from UAVs stationed at 20 km altitude, and he has written a book, Memoirs of a Rocket Scientist, available through Amazon. He finally had to quit playing tennis and weekly ice hockey at age 71 because of ankle arthritis, but he still leads

“After years of plotting schemes that responded to a client’s needs, I am now selling plots with clues to test the mystery-solving acumen of book readers. Even have a few Rensselaer engineers and architects in my customer base.” JERRY LENAZ ’63

Calif., to watch three nights of Rock and Roll at Desert Trip with The Rolling Stones, Paul McCartney, The Who, Roger Waters, Neil Young, and Bob Dylan—marijuana smoke was thick in the air. His son (Denis) and wife (Mo) were expecting their first child (and Bob’s first grandchild) in May, a life-changing event for all concerned.

Allan Sperber recently cruised thru the Panama Canal (which should be on all engineers’ top 10 list!), and then spent February in south Florida. His
G. Nagesh Rao ’02, chief technologist for the U.S. Small Business Administration’s Office of Investment and Innovation, was one of 10 Eisenhower Fellows selected from across the country in 2016. Here he is congratulated by organization president George de Lama, left, and program chair General Colin Powell, right. As an Eisenhower Fellow, Rao traveled to Sri Lanka and Vietnam to promote small business technology transfer and innovation research.

a wind quintet that plays around the Phoenix, Ariz., area. —Erik Pettersen ’65, erik.pettersen@comcast.net

—1966—

Pardon me for waxing existential, gentlemen (and ladies), but we members of the 50 Year Club have lived a bit and have wisdom to share. Think of this as Carnak’s make-every-day-count entreaty. I’m speaking of why we are still here and what we are going to do about it.

Rich Davison, our classmate who kindly drove several of us to the dinner/dance at the Reunion and then inadvertently dropped one of us on her knees behind his car, is dead. This is not his obituary. I just want to mention a few things. Rich came to RPI from Nebraska with good All-American values. He was a most honorable and decent man.

If you spoke to Rich at our 50th Reunion, you may recall that his soulmate wife had died recently, that he had since been diagnosed and treated for brain cancer and seemed to be recovering, and that he was raising his middle-school-age granddaughter Chloe single-handedly. He couldn’t yet chew and taste steak because of recent radiotherapy, but he was optimistic about steak in his future.

In early March, Rich awakened from a nap with a torrential nosebleed. Unable to stop it, he called an ambulance. Before he’d let them take him to the ER, though, he made them clean up his blood, so that that wouldn’t be the first thing granddaughter Chloe would see when she got home from school. She was still grieving the surprising and quick recent demise of her grandmother to cancer, after all. The following week Rich died.

Rich Davison, reunited with wife Lee and sibs and friends, may be viewing us as he eats a piece of steak. Although he made them clean up his blood, he could actually have been killed, you know. And I couldn’t walk at all for over 10 weeks. Trying to remember if I’d ever made a mistake myself made forgiveness very easy.

Rich Bollam and I had lunch on his recent Southern Sweep. Seriously, no one is better than Rich at keeping up with old friends. Every spring he comes to Florida alone to play golf and get together with Theta Chi’s and Bonnie. He also goes on a long bike ride in FL every single day.

Finally, and I’ve been saving the best news for last, Les White has agreed to contribute to future class notes. He was one of several classmates who helped out tremendously with class notes on the Reunion (the one I mostly didn’t see so couldn’t really write about). I’m thinking of it as team-writing, Les and Bonnie together. He may be thinking of it as succession planning. Time will tell.

We call it “succession planning” when I do it with clients as a financial planner. I am not being morose. In fact, I am unaware of any deadly possibilities in my near medical future. Still, these are important issues to consider. Who will seize the opportunities in my near medical future? Who will seize the opportunities in my near medical future? Who will seize the opportunities in my near medical future?

What does all this mean? For me it’s a siren call to do something important, to reach out to make the world a better place. Please let me know what you’re thinking about all this.

Many, many of our classmates are doing more than merely occupying square footage between bourns and golf games. To name a few: Pete Tasker and Eric Kluz have both been involved in tutoring and social outreach in an inner-city part of Boston with social unrest. Gordon Snyder works tirelessly for RPI to recruit students with promise to become technology leaders of the 21st century. Beverley Dahmer Sved has dedicated years of her life after IBM to public service in her community as mayor, planning board chair, etc. Bill Pomeroy expanded the catalog of available stem cells to include minority groups so that they, too, might be cured of cancer.

The list goes on and on.

Paul MacNeil is honing critical-thinking skills in the next generation of technologists. Such skills he considers of paramount importance. He teaches graduate students and runs the 100-percent online, software engineering master’s degree program at Rensselaer University in Macon, Ga. After studying physics at Rensselaer, Paul went west to the University of Arizona for M.S. and Ph.D. degrees, also in physics. He worked for a while on physics and planetary research at MIT and then moved to industry where he was a software developer and systems engineer for telecommunications and synthetic aperture radar. He found his niche in teaching graduate students, though, and has no plans at all to retire. Paul is most proud of his work on the Viking Relativity Experiment at MIT.

Compared to most of our classmates, Paul is a relative newbie. He and Mary will celebrate their 25th anniversary before you read this column. He’d like to hear from anyone he knew in college.

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Rich Bollam and I had lunch on his recent Southern Sweep. Seriously, no one is better than Rich at keeping up with old friends. Every spring he comes to Florida alone to play golf and get together with Theta Chi’s and Bonnie. He also goes on a long bike ride in FL every single day.

Finally, and I’ve been saving the best news for last, Les White has agreed to contribute to future class notes. He was one of several classmates who helped out tremendously with class notes on the Reunion (the one I mostly didn’t see so couldn’t really write about). I’m thinking of it as team-writing, Les and Bonnie together. He may be thinking of it as throwing a few paragraphs over the wall to me.

Time will tell.

We call it “succession planning” when I do it with clients as a financial planner. I am not being morose. In fact, I am unaware of any deadly possibilities in my near medical future. Still, these are important issues to consider. Who will seize the opportunities in my near medical future? Who will seize the opportunities in my near medical future? Who will seize the opportunities in my near medical future?

What does all this mean? For me it’s a siren call to do something important, to reach out to make the world a better place. Please let me know what you’re thinking about all this.

Many, many of our classmates are doing more than merely occupying square footage between bourns and golf games. To name a few: Pete Tasker and Eric Kluz have both been involved in tutoring and social outreach in an inner-city part of Boston with social unrest. Gordon Snyder works tirelessly for RPI to recruit students with promise to become technology leaders of the 21st century. Beverley Dahmer Sved has dedicated years of her life after IBM to public service in her community as mayor, planning board chair, etc. Bill Pomeroy expanded the catalog of available stem cells to include minority groups so that they, too, might be cured of cancer.

The list goes on and on.

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3,000
In May, Don Downer ’56, retired guided missile systems engineer at Johns Hopkins Applied Physics Laboratory and Marine Corps veteran, sent his 3,000th care package, filled with cookies, Twizzlers, tuna, and Spam, to troops in Afghanistan, an effort he began in 2009.

Adam Oates ’85 was named one of the top 100 greatest players in National Hockey League history. In celebration of its centennial season in 2017, the NHL announced in January its list of the 100 greatest players ever to play the game. Oates was elected to the Hockey Hall of Fame in 2012, the only Rensselaer alumnus so honored.

100
Cheryl Porro ’93, senior vice president, technology and products, at Salesforce.org, and Casey Edgeton ’06, senior product designer at the health care startup Forward, were named two of the 43 most powerful female engineers for 2017 by Business Insider.

43

CLASSNOTES
—1967—
From Dick Cunningham: Until March 1963, I had planned on walking three short blocks to the University of Wyoming to attend college. I am not sure how I transitioned to attending RPI, sight unseen. RPI was in NYS (I had never been east of the Black Hills), in an old river town, on the Hudson, and in the hometown of Uncle Sam.

I did wonder how I was accepted at RPI. After meeting classmates who had 800s on their SATs or were taking Calculus and Physics III (like my roommate), I concluded it wasn’t because I was smart. Dr. Folson’s welcoming speech provided some insight when he said our class had a representative from most of the states (that included WY).

A train ride from Wyoming dropped me in the Tri-Cities area. I arrived in downtown Troy and was surprised that nobody there seemed to know what or where Rensselaer Polytechnic Institute was. I finally surmised that the red brick buildings at the top of the hill with green tile roofing might be the ‘tute. Besides the standard issue red beanie, a most useful tool we received as a freshman was the frosh directory.

A key decision was made at frosh registration. I walked up to the table in the Field House and I was asked if I was going to study architecture, engineering, or science. I inquired what the difference was between engineering and science and was told: Science students take either German or Russian and Engineering students take drawing. I became an engineering student.

So, I guess I was ready to experience four years at RPI... And now, 54 years later, I’m looking forward to seeing many of my classmates at our 50th.

From Dave Green: I graduated with a Bachelor of Civil Engineering degree in 1967 and then went to work for the New York State Dept. of Transportation in the Albany office. I received a Master’s of Transportation Engineering in 1969 from RPI through a co-op program with NYSDOT. My primary responsibility was functioning as the “middle man” between the engineering world and the data processing world, which was very interesting and challenging since computers were in their infancy processing world, which was very interesting and challenging since computers were in their infancy.

After 33 years, I retired in 2000 and moved to Florida. We live in one of those 55+ communities where almost everyone has a golf cart. I enjoy golf, tennis, lawn bowling, and traveling—we have been to 50 countries since retiring. I enjoy singing in the church choir and creating Shutterfly photo albums. I have also served on many community boards and committees for the betterment of where we live.

We have two children and seven grandkids in NJ and OK; we greatly enjoy our times with them.

We also truly enjoy getting together with eight other RPI grads and their spouses who were a part of the Inter-Varsity Christian Fellowship at RPI. Seven of the nine lived together at a house on Hill Street in 1968. Since retirement we get together every two to three years; we will have our 50th anniversary next year in the Capital District area.

From Ken Neu: After getting my master’s at RPI in 1968 I went to work for Raytheon, Space & Information Systems Division, in Sudbury, Mass. A year later, 8/11/1969, I became an FBI agent. For the next 33 years I moved around in different positions and locations, retiring at the end of November 2002, from FBIHQ in WDC as assistant chief of the FBI’s Violent Crimes and Major Offenders Program. Thereafter, for a couple of years I worked for the Gavin Group auditing the various Catholic Dioceses around the U.S. for compliance with the Child Protection Charter adopted by the U.S. Conference of Catholic Bishops. I retired permanently in 2005 and focused on building a house in Florida to which my wife and I moved in April 2006. I have been active in a number of organizations since that time to include the Greater Daytona Beach Chapter of the Society of Former Special Agents of the FBI (SFSAFB). In June 2016, I was elected to the executive board of the SFSAFB as national secretary and officially assumed the position in late August.

Southern Vermont College honored award-winning, former IBM executive Nicholas Donofrio at the College’s 90th Commencement in May. Nick is a 44-year IBM veteran who, as executive vice president of innovation and technology, helped steward the company through periods of tremendous change and growth. In 2008 he was selected by the chairman to become an IBM Fellow, the company’s highest technical honor. —Stu Berg ’67; stuartberg@adam.rpi.edu

—1968—
50th Reunion: September 2018 Classmate Larry Kagan’s steel sculptures were exhibited at the Titelman Gallery of the Vero Beach Museum of Arts in Florida last spring. He calls his works on exhibit object/shadow art, which combines the mass of traditional sculpture with the silhouette of shadow art. Object/shadow art uses strong lighting at specific angles to illuminate an abstract metal sculpture that creates a shadow image that is very different from the visual shape of the sculpture.

Larry says the shadows are “…insperable from the objects that cast them.” He started working with steel sculptures after he saw the raw creative potential in the range of lines and textures that the steel fragments acquire over time as they break, bend, and rust. Larry has studied printmaking, etching, lithography, and acrylic sculpture, and combines his love of drawing with his new love for mangled steel shapes in the object/shadow artworks.

In April President Trump was hosted by Nick Pinchuk at Snap-on Inc. headquarters in Wisconsin, where Nick is the CEO and chairman. The visit of the president and his signing of an executive order for “Buy American” and “Hire American” policies were to highlight the essential nature of American manufacturing to our nation’s economic future.

Snap-on is a well-known supplier of professional grade tools and equipment and provided an American flag background made up of red, white, and blue wrenches for the president. Nick has actively supported and promoted programs that emphasize the importance of domestic manufacturing for many years. In addition to his personal efforts, Snap-on is a corporate sponsor of the Manufacturing Innovation and Learning Laboratory at RPI.

—Mal Crawford ’68; KIMC-Mal@earthlink.net

—1969—
Send me your updates so that we can share your news in the next edition of Rensselaer magazine.

—Henry Scheuer ’69, henrynewyork@gmail.com

—1970—
First things first, classmate Stephen Valentine has created an RPI Class of ’70 Facebook page. Definitely join the group. As of May 15, there were already 40 members. Stephen and others have put together the following:

First is a list of classmates who are deceased. 37 classmates are already known to be deceased. If you know of any other classmates that have passed away, please tell us.

Second, we have our Angell Hall bell ringers. It is a beautiful thing to hear the bell ring.

Third, you can email your updates so that we can share your news in the next edition of Rensselaer magazine.
photos and other information on the page, getting us ready for a grand 50th Reunion in 2020.

Stephen Valentine also wrote to me. “After living in the East all our lives (with the exception of a year in Vietnam, thank you Uncle Sam), we decided to downsize and move to Reno. Western trips were always two-week vacations and we wanted to see more of the West at our own speed. Mission accomplished. No state income taxes and we’re five miles from California. That said, we do miss Pittsburgh and the East Coast.”

Gerardo Brown-Manrique spent the 2014-2016 academic years at Miami University’s John E. Dolibois European Center in Differdange, Grand Duchy of Luxembourg. The center will celebrate its 50th anniversary in that country in 2018, by which time he hopes to again be there for another two-year appointment. He has, however, officially retired from professional practice in the State of Ohio and is now emeritus architect in that state. He is looking forward to 2020, and meantime keeps trying to organize reunions with his Greene Building colleagues.

Chuck Rancourt was named Adviser of the Year at Siena College by the Student Government Association. The award is presented to an adviser who has been a great help to both the Student Senate and the student body. Chuck retires from Siena this year after being a successful part of the Entrepreneurship Initiative.

Susan Alten wrote how her memory glosses over the hard stuff and what she remembers most was all the wonderful times she had and the lifelong friends she met. Stephen Valentine and she served together years later in the Defense Logistics Agency, although he was a Naval officer and she was in USAF. At our last Reunion she sat in on what was supposed to be a physics class. It turned out to be chemistry, and the professor opened by telling everyone how badly most of them had done on the first quiz. “I suddenly flashed back to how hard I found chemistry, and left shortly thereafter with a vaguely familiar feeling of being overwhelmed.”

I always enjoy my lively Facebook discussions with Tom Myers; it may be about corgis or politics or RPI. Recently Tom had lunch with Elaine and Hap Erstein ’70 and among other things talked about Jim Detjen and his good deeds in other countries. Tom remembers that he never had any of those problems that guys who graduated in 1970 had. “I got my degrees on time, although my parents saw me running up to the Field House after having just confirmed that I’d be getting my diploma at lunch that day. It was close.”

After 13 wonderful years living in France experiencing its culture and lifestyle, Joanne and Kenneth Titow have returned to the U.S. to live in Scottsdale, Ariz. Joanne continues her 30-year-old tax preparation and representation practice under her business name of Joanne McConnell, EA. While in France they attended several RPI events including the wonderful reception given by President Jackson at the prestigious auto club location overlooking the “obelisk” in central Paris.

Recently I reconnected with my Acacia fraternity brother Joe Alber, who has had a successful career in the motion picture and television industry working for SONY Pictures, CBS, Columbia Pictures, MGM, and many others. He recently shared a photo of the crew he worked with on both Star Trek Voyager and Star Trek Next Generation. He and his wife, Eileen (Cartwright) Alber ’72, have lived in Thousand Oaks, Calif., since 1976.

Bill Cobb retired a few years ago from GM Proving Grounds, where he was a vehicle dynamics engineer. He is still active with FSAE college race car teams. Bill and his wife, Terri, live on a 25-acre ranch in Brighton, Mich. He has restored nine vintage windmills to working order and still harvests hay for local horse owners. I’m glad to hear that Bill is healthy (having beaten prostate cancer) and is staying active by playing in a 60-and-under hockey league.

Dave Ritchie writes that he recently visited Al Swierczek ’72, who is not yet ready to retire, and Gary Nelson ’70. Gary and his wife, Dale, have moved back to Troy, having lived in Virginia for many years. Gary and Dale are supporters of the local food pantry and the Troy Chamber Music Series. Dave is now retired and recently did a multi-day bike tour in Wisconsin.

Martin Nadelman writes that he and his wife, Susan, were displaced from their Hilton Head resort by Hurricane Matthew. Returning four weeks later they discovered no damage to their property. Susan has had several ailments recently, and Martin has been occupied as chief cook, bottle-washer, and caregiver.

I’ve actually heard from several of our classmates over the last months. I have taken my cue from what Rick Hartt ’70 wrote a few years back—his lawyers have advised him that it’s not a good practice to make up stuff about my classmates. With Reunion this fall, I fully expect to hear lots of news from all of you out there somewhere…

In the meantime, Chia Day was one of two recipients, worldwide, of the Engelberger Robotics Award, in 2016. This award has been presented annually since 1977 by the Robotic Industries Association to individuals who “have [had] a significant impact on the robotics industry.” In his four years at Foxconn, Dr. Day has overseen the installation of more than 40,000 robots. He and his wife, Sansan, reside in China. Their 40th wedding anniversary coincided with the trip to Munich to receive his award, which consists of a plaque, a special medallion, and an honorarium. He notes that the award is “like a lifetime achievement award, recognizing contributions to the field of robotics in a career.”

Rick Zevin sent me a quick summary of 45-plus years. His computers career started with his undergraduate mathematics major co-op sponsorship by Ciba-Geigy; the program led, ultimately, to
a 35-year career at IBM in Poughkeepsie, Boca Raton, and finally Austin, from where he retired in 2009. (Note to you “kids”—we of ’72 were among the last at RPI who were not offered a major in computer science.) Rick and his wife, Arann, were married following our freshman year; she also worked for IBM. Enamored of the West Coast by her trips to Silicon Valley, they retired to Carmel by the Sea in 2012. Recreational runners both, they consider themselves fortunate to be able to run by the Pacific nearly every day. And “because of the large and growing number of local wineries, we have become wine enthusiasts.”

Last but not least, last fall my wife Bernadette (Bunny) and I went to south Jersey for the wedding of Erica Kemper, daughter of Chris Kemper and Robin Block Kemper ‘79. (The wedding was actually on the PA side of the Delaware River.) As is usually the case at Kemper events, we were joined by Carol and Mark Bensley and Karen and Jeff Malnick. Jeff was Chris’ room/apartment mate during our undergraduate years; Chris, Ben, and I were Playhouse denizens. (Actually, Jeff graduated in ’72. The rest of us had extra undergraduate years, although Chris now holds a Ph.D. as well.)

I hope as I write this that our Reunion will be both great and well-attended. Please send news. —Bob Dvorak ’72; bobdvorak@hvacrr.com

—1973—

45th Reunion: September 2018 We received a nice catch-up note from Mike Tackett in February. He writes that he retired from the oil business in 2016 after 42 years of wandering the globe for Shell, Superior, Mobil, and finally Exxon oil companies. He now does some consulting work out of his home in Woodlands, Texas. Mike’s two daughters now have four children, making him and Barb happy grandparents, albeit far from their Memphis and Washington, D.C., homes.

MIKE ZIMMERMAN ’79, a professor at Tufts University, has been leading a team working on the next-generation lithium-ion battery. This research was featured early this year in a PBS NOVA episode.

Of historic interest, Mike found his picture in a book about baseball teams in Ashland, Ky., where he was a star in Little League through high school. Mike’s most memorable game was a 1-0 victory his senior year in high school, where his one RBI allowed them to beat Don Gullet, a future major league for the Cincinnati Reds.

We also heard from Michael Eckstut, who recently stepped down from leadership of his PE-owned services firm, which focused on modeling and simulation of improved drug development. At 65-66, he claims “this is the new 55,” and is negotiating for his next gig. Michael still lives in NJ being an active participant in the sandwich generation...taking care of both his parents and kids. (Both Michael and Mike T. are chemical engineering grads, by the way, as I was. We clearly had a great education at RPI, despite never leaving the Ricketts Building.)

In other news, Dick Lorenz recently retired from Boeing Co. and is undertaking restoration of an antique Corvette. He also has painted his house for the last time (by himself anyway) and is patiently watching “his neutrons atrophy...I guess that’s what old aeronautical engineers do.

Also, Mark Schwartz recently moved to Monroe, NJ., after many years in Manalapan. After 11 years at Arrow Electronics, Mark moved to Philips Lighting in LED sales last January. His son Brandon is now an explosive ordnance specialist in the Navy...we really appreciate what you do for this country, Brandon; that’s a tough job! Mark’s daughter Jamie is a marketing director for an internet sports company, a safer profession.

As always, please check in with Steve Norton, our Class of ’73 webmaster at the rpi73.org site. We’d love to see your updates! —Gary DiCamillo ’73; garydicamillo@gmail.com

—1974—

Phil Luehr recently co-authored an article on social selling for SAP. Check it out at http://blog.sellingpower.com/2017/04/three-ways-salespeople-at-sap-are-winning-with-social-selling.html.

President Jackson was down our way (Florida in February...who doesn’t want to come!), where I talked to her about 100% RPI (100% Renewable Power Infrastructure at RPI) for 2024—our 50th anniversary and the school’s 200th. She pointed out that RPI needs about $20M to upgrade the central power plant for the campus before they can invest in renewable power, so even though Burlington, VT, is 100% renewable and Governor Cuomo says NY will be 100% renewable by 2050, RPI will not be in the lead. As POTUS says, “Sad, so sad.”

Lee Actor is composer-in-residence for the Palo Alto Philharmonic and they recently premiered his latest work, “Concerto for Trumpet and Orchestra,” his 10th commissioned work for them. It is his first piece featuring a trumpet solo. Previously, Lee wrote software code.

Just thinking out loud but how about if enough of our musically inclined classmates got together and put on a 50th anniversary concert? Any interest out there? —James C. Wernicke, P.E. ’74; wernickejc@yahoo.com

—1975—

I ran into Dave Hebrank (BioMed E.) at a charity color run for The Shattered Canvas held on the campus of the local community college early in April. The Shattered Canvas is a recent startup nonprofit for victims of child sexual abuse, run by a mutual friend here in Maryland. —David Stark ’75; dstark@hotmail.com

—1976—

Jerry McMahon was named president and CEO of Harpoon Therapeutics, a preclinical-stage biotech company that is developing novel T-cell recruiting antibody therapies for treating cancer patients. In his 25 years of biotechnology leadership and scientific innovation, he has served as president and CEO of Kollman Pharmaceuticals, senior VP at MedImmune, the biologics arm of AstraZeneca; and head of two oncology development companies. In prior roles he was a key player in the development of oncology drugs Sunetin and Palladia. —Michael Mino ’76; mminos@propertypass.com

—1977—

Jim and I are looking forward to seeing you at Reunion & Homecoming!

I received a nice update from Jim Brock. “After 15 moves I have decided to retire from Arconic (Alcoa). I started my career after graduation with a four-year stint in the Army (ROTC at RPI). I fondly remember my fellow ROTC cadets Ilsa, Bill, Val, and Fred and the long hours studying with Jim Johnston in the Wyck for Doc Savage’s tests. The goal was to beat Joe Strauss on Doc Savage’s quizzes—rarely achieved. My wife often watched Fred and I play lacrosse down the hill from the Wyck.

“I served in Germany and the USMA–West Point while a member of the Corps of Engineers. After my military service, Arconic (Alcoa at the time) sent me to various assignments in Indiana, New York, and lastly Knoxville, Tenn. Along the way I picked up my M.S. at that engineering school in Potsdam (NY).

“During my 36-year Arconic career I picked up a handful of patents, an Arthur Vining Davis award, and an Impact award for various projects. My last assignment has been providing support for Arconic’s global Casthouse system, and my travels have taken me to such garden spots as Russia, Saudi Arabia, Korea, Brazil, and Australia. This has kept me on the road 70 percent of the time.”
“Pam and I (we were married at the beginning of my junior year at RPI) have not made a final decision on where to ‘retire.’ Our three children are spread across the U.S.—one in Arizona, one in Lafayette, Ind., and one here in Knoxville—all successful in their careers. I am looking forward to our 40th Reunion.”

Remember, if you are reading this and haven’t sent me an update, you owe me one. Class rules—if you read, you have to write! — Maureen H. Regan Robinson ’77, maureen7221@aol.com

—1978—

40th Reunion: September 2018  John Grubb was kind enough to send us an update from Lower Burrell, Pa. After receiving his Ph.D. (Materials) in 1982, he went to Allegheny Ludlum. After spending a good 34 years there, he retired from Allegheny Technologies at the end of 2016. John remains active in ASTM and ASME (Pressure Vessel Code). Their two sons, who chose not to go into technology and not to go to RPI, are doing well on their own. They are planning to stay in western Pennsylvania, at least for now. John, give my regards to Cheswick, just down the road from you. Spent some long weeks working on boiler outages for Duquesne Power there!

This spring my wife and I attended our daughter’s wedding in Florida. Great ceremony and certainly the proudest day of my life walking her down the aisle. On the way back up, stopped in D.C. to visit Jack Haberle and his family. Cherry blossoms were in full bloom and spent a great day going through the Museum of American History. As always, look forward to your news and items of interest. — Mark Keough ’78; mark.Keough@cox.net

—1979—

I am actually writing this in Troy, trying to see the Frear Park ice rink from the Hilton Garden Inn on Hoosick Street. Yes, a few things have changed in nearly 40 years. And now the news:

Mike Zimmerman has been leading a team working on the next generation lithium-ion battery. Mike, a professor at Tufts University, has formed a company, Ionic Materials, to develop and commercialize the battery. The key to the invention is a solid plastic electrolyte; in most lithium-ion batteries, the electrolyte is a liquid, thus subject to fire or explosion when hit or pierced. This research was featured early this year in a PBS NOVA episode.

Paul Czerwinski has been named chairman of the board of directors of Barton & Loguidice, an engineering, environmental, planning, and landscape architecture firm located in Syracuse.

Michael Ruane is now director of corporate development at Savant Capital Management, headquartered in Rockville, Ill. Michael is responsible for sourcing and negotiating acquisitions and managing the merger and acquisition process.

And our man in Hong Kong, noted IP legal expert Ron Yu, went to Geneva last year to attend a digital copyright conference at the UN World Intellectual Property Office, as well as speaking to the General Assembly there. He also was invited to speak at a Far East Film Festival in Udine, Italy. — Paul Sicard ’79; psicard@entergy.com

—1980—

George McVay, gmcvay@hygena.com, has been appointed vice president and general manager of the Hygena/Warburg Pincus Qualicon Diagnostics business, recently divested from DuPont, continuing to provide global business and integrated operations leadership of the new company. George is also supporting new strategic initiatives including targeted acquisitions to further expand and grow the global food safety business portfolio over the next 5 to 7 years. George works in Wilmington, Del., and George and his wife, Nancy, reside in Elkton, Md., near the Chesapeake Bay.

Steve Tice, COO of EVDrive Inc., sent another update on the success of his company: EVDrive Inc. is proud to reveal its contribution to the development of the industry milestone Nikola One prototype, a zero-emission hybrid electric long haul semi-truck that aims to fundamentally change how freight is transmitted globally from the perspective of cost, performance, safety, and environmental impact. Specifically, EVDrive was in charge of designing the prototype powertrain, engineering, fabricating, and installing unique sub-systems like the 4 80kWh, total 320kWh chiller cooled battery system, power distribution units, managing the custom 2-speed custom motor/gearbox design, and many other required sub-systems. The prototype was unveiled to the public in December 2016. The production trucks will replace the gas turbine range extender with hydrogen fuel cells.

Also, in February, another record was set by the EVDrive-Train-powered Genovation Cars Electric Corvette. The all-electric Corvette was able to reach 209 mph at Kennedy Space Center’s Space Shuttle Landing Facility in Merritt Island, Fla. — Kathy Pratt Harrington ’80; kpharrington@gmail.com

—1981—

Judy Wornat was named dean of the College of Engineering at Louisiana State University in January. As dean, she holds the Bert S. Turner Chair in Engineering. Before returning to the academic world, she worked as a chemical engineer around the world. She joined LSU in 2002 after spending eight years at Princeton. — Marc Glasser ’81, mglasser81@gmail.com

—1982—

Please join us on Facebook! www.facebook.com/groups/RPIClassOf82. Be sure to send your 35th Reunion stories!

Anne Massey (B.S. ’82, M.S. ’84, Ph.D. ’91) shared that “…after 21 years at Indiana University’s Kelley School of Business in Bloomington, I am making a move to the University of Wisconsin’s
School of Business to serve as their next dean. I’ll miss Bloomington and IUB, but I am very excited about this opportunity. My new email will be anne.mussey@wisc.edu.

Joel Nudi provided this update as a longtime reader, first-time writer: “I moved around a bit since my RPI days, and in May 2017 I came back home to the Capital District as the vice president for finance and administration at Maria College in Albany. Previously, I was an administrator at Rutgers University in NJ after working at the University of New Mexico and the N.M. Department of Education. That was after 11 years in Dublin, Ireland, where I started as a contract project manager at Intel, was recruited by KPMG, earned an MBA, and ended up creating and running my own consulting business for seven years (before the crash of ’08). And that was after 13 years with New York state as a capital project manager in the Office of Mental Health. 35 years have flown by, but RPI prepared me well!”

Bob Hoey wrote, “I have been with IBM for 30 years and am the general manager for IBM’s Financial Services Market serving the largest banks, financial market firms, and insurance companies who make up about 10 percent of IBM’s total global revenue. RPI taught me many things including that data is one of the world’s most important resources, the value of being fact-based in making decisions, and that you can conquer the business world with kindness on the journey to achieving your ultimate potential.”

Steve Anlage noted that he has been a professor of physics at the University of Maryland, College Park, since 1990 after receiving his Ph.D. from Caltech. Along the way, he was appointed as a University of Maryland Distinguished Scholar-Teacher in 2016, and received the 2016-17 University of Maryland Invention of the Year Award for developing a new wireless power transfer technology with a group of undergraduates.

In our Spring 2016 issue, Craig Mainman mentioned that he was building an airplane at home. Dave Trumpold mentioned that he has met quite a few RPI alumni through the military. “Notably, I hopped into Randy Kuldell (see below) at the Washington Navy Yard two years ago, and we stay in touch regularly. I work at Naval Sea Systems Command in the Navy Yard supporting systems that are used on surface ships for command and control. In my free time I enjoy micro-breweries, windsurfing, and snowboarding.”

Randy Kuldell submitted this great update, noting that he, Michael Laraia, David Bohan, Mark Swyer, Michael Tessman, Robert Stanton III, and Thomas Wojtusik all met in Troy in April for a Phi Kappa Theta ’82 reunion.

The brothers have kept in touch over the years and make a point of getting together each April. Randy is a senior program manager for Criterion Systems in Vienna, Va.; Michael (Laraia) is the vice president, Global Services Product Management, for ARRIS in Philadelphia, Pa.; David is vice president and chief development officer for Valley Health System in Ridgewood, N.J.; Mark is president of iProSell in Albany, N.Y.; Michael (Tessman) is a senior computer scientist, Space/Ground System Solutions, in Washington, D.C.; Robert leads airworthiness certification of the F-35A for the U.S. Air Force in Arlington, Va.; and Thomas is a program manager for Apprenda in Troy, N.Y.

Normally attending but unable to join them this year were Karl Mohnar, a signal and image processing engineer at Northrop Grumman in Raleigh, N.C., and Timothy Fisk, senior director, engineering and construction, NRG Energy in Houston.

Brian Adler wrote to let us know that this year he finished his 33rd Boston Marathon since graduation in 1982—which was his 179th marathon since 1980 (including one on a rowing machine). When he’s not running or working out, he teaches physics and electronics at Tappan Zee High School in Orangeburg, N.Y., to the next generation of engineers. Brian is the proud father of four, two in college, one of whom plays Division 1 soccer at Columbia University, and the other is a Division 1 rower at Lehigh University. —Mark Bowers ’82; mark.bowers@lighthouse-one.com

**DEAN ROTH ’84, MBA ’85**, is proud to be one of the producers of the Broadway show *The Play That Goes Wrong* at the Lyceum Theater. After seeing the show in London three years ago, and deciding it was the funniest thing he ever saw, he became part of the team to bring it to Broadway (along with J.J. Abrams).

Here’s his update! “I decided over a year ago to get back to hardware design and have joined Intel as a senior design architect in a research group doing work on Omni Path fabric. I’m also still building my Sling 4 airplane in my garage and expect it to be done early next year. And, if all that is not enough to do, I’ve started a website and app service for pilots called emergencyrunways.com and it’s in development now. I expect to launch that this summer.”

**Joel Nudi**

Jeffrey DeRose, a signal and image processing engineer at Northrop Grumman in Raleigh, N.C., and Thomas is a program manager for Apprenda in Troy, N.Y.

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Patricia DeLauri ’85
Peter Quinones ’87
Jane LaGoy ’86
—
Please send your news because I’d like to share it!

Remember the exciting hockey prowess of Adam Oates as he helped lead our hockey team to winning the 1985 NCAA Championship? Of course, you do because those were the thrilling days of our youth. We know he went on to have an impressive professional hockey career. In January, when the National Hockey League celebrated its 100th year at this season’s All Star Weekend, Adam Oates was identified as one of the 100 Greatest NHL Players. Oates enjoyed a 19-season career participating in five NHL All Star Games. He was selected for the NHL Second Team All Star in 1991. Upon retiring, he ranked fifth in NHL history in assists (currently 76th) and 13th in points (currently 176th). In 2012, he was inducted into the Hockey Hall of Fame. Oates then served as the head coach for the Washington Capitals; he joins Kevin Constantine ’80 as the only two RPI players to lead NHL teams. Congratulations!

Please send your news because I’d like to share it!
—Patricia DeLauri ’85; piedadauri@shbua.com

—1986—

Donald Friedman, P.E., (B.S. CE) has been named a fellow by the ASCE (American Society of Civil Engineers) board of directors for his over 25 years working on the investigation, analysis, and restoration of landmark buildings. Don’s specialty lies in the integration of modern construction into historic buildings to save them, such as the 1846 Fort Jefferson National Monument, crypts in the NY Marble Cemetery, and New York’s 1848 John Street Methodist Church and 1906 Langham Apartments. He has taught engineering of historic buildings at RPI, UMass Amherst, and Columbia University. He authored After 9-11: An Engineer’s Work at the World Trade Center, Historical Building Construction, and The Investigation of Buildings, along with speaking at multiple ASCE Forensics Conferences. Don earned an M.A. in historical studies from the New School for Social Research and is certified in the practice of structural engineering by the Structural Engineering Certification Board. He is currently president of the consulting firm Old Structures Engineering, PC.

Mike Bartikoski was appointed senior vice president of Land O’Frost in April. Mike is an expert at global operations, particularly in the food, beverage, and supply chain industries, and has experience working at global food brands like the HERSHEY Co. and Coke-Cola Beverages. At Land O’Frost, he oversees corporate operations and develops the manufacturing, supply chain, and organizational excellence teams.

Brett Evans moved from Central New York to Tampa, Fla. With only 3 million people in our way, we haven’t crossed paths yet but hopefully we will at an RPI function. Keep the news coming. —Diane Updegrove ’84; kaptde@shgbglobal.net

—1985—

Have you logged onto Rensselaer Alumni Connect lately? There are numerous types of career-building resources at your fingertips; the content is always evolving. Check it out, and see what it can do for you. (RensselaerAlumniConnect.com)

—1987—

Linda Jojo, a senior executive at United Airlines, was named Chicago CIO of the Year by the Chicago CIO Leadership Association in March. She won in the Super Global category, for organizations with over $1 billion in revenue and over 5,000 employees outside the U.S. Linda’s role at United Airlines was expanded in June when she was named executive vice president, technology, and chief digital officer.

Pallavi Verma was named senior managing director-U.S. Midwest by Accenture in December. In the newly created role, she leads Accenture’s business in 12 states and serves on the North American Leadership Team. She is a 30-year veteran of Accenture who has held a variety of leadership roles in the firm’s Health & Public Service practice.

—Peter Quinones ’87; pjquinones1@yahoo.com

—1988—

30th Reunion: September 2018
David Frey (B.S., BME, & MBA) has been appointed by New York City Mayor Bill de Blasio to be a NYC judge, currently assigned as a criminal court judge in Manhattan. This appointment came after working at the Richmond County District Attorney’s Office for over 19 years, where he was last the bureau chief of investigations.

Brian Seaworth (B.S. ME) has begun his third term in the New Hampshire House of Representatives and his second term as the clerk for the Labor, Industrial, and Rehabilitative Services committee (he says to note their acronym LIARS). He also represents the House on the Workers’™ Compensation Advisory Council and is a member of the Executive Committee for the Merrimack County Delegation. His two kids (ages 3 and 6) occasionally accompany him to the seemingly endless meetings. If you are in Concord, N.H., ask for a guided tour of the NH State House, as representatives...
CLASSNOTES

Scott Sackoff '89 (center) rang the opening bell at the New York Stock Exchange July 11 to celebrate the launch of the SerenityShares Impact ETF. The fund includes companies whose products and services target 20 defined challenges, from clean water, renewable energy, and environmental stewardship to elder care and education.

have met in the same hall since 1819, making it the oldest chamber in the U.S. still in continuous legislative use.

Michael Shamma (B.S. CE, M.Eng) has joined the global infrastructure firm Gannett Fleming as the Northeast Transportation DOT/tolls business line leader. Based in NYC, he is responsible for guiding the firm's DOT/tolls business strategy and growth across the northeastern U.S., serving as project director and manager on key projects, and supporting the company’s broader transportation business line initiatives. Shamma brings nearly 30 years of transportation experience, having served as president of a mid-size NY construction management and engineering company, chief engineer of the NY State Thruway Authority & Canal Corp., ombudsman for the new $3.9 billion Tappan Zee Bridge replacement in Tarrytown, NY, and with the NYS Dept. of Transportation for 24 years.

Air Force officials announced in December that Brig. Gen. William “Bill” T. Cooley would become the commander of the Air Force Research Laboratory headquartered at Wright-Patterson Air Force Base. He oversees a $2.1 billion Air Force science and technology program and an additional $2.3 billion in externally funded R&D.

Stacy Malecki (M.S. Mech.E. '88 and MBA '94), senior director, Hot Section Engineering at Pratt & Whitney, was named a 2017 STEP Ahead Award Honoree. The STEP (Science, Technology, Engineering, and Production) Ahead award, given by the Manufacturing Institute, recognizes women in manufacturing fields who exemplify leadership in their companies. —Grace Vitagliano Roth '88, grace@abcworldvacations.com

—1989—

Walt Mykins joined Autotask, East Greenbush, NY, as head of their client services team. Walt has over 25 years of experience working for tech companies in the Albany area including MapInfo Corp. and Pitney Bowes Software. Congratulations!

Mike Zielhl, MBA '89, was recently named vice president and general manager for the Multi-Market Business Unit at MACOM in Lowell, Mass. The Multi-Market BU offers RF, microwave, and millimeter wave products across several different product segments and technologies, including GaAs, GaN, SiGe, SOI, RFCMOS and MACOM proprietary processes. —Joseph Hom '89; johom@flash.net

—1990—

Greetings, Class of 1990! It’s been very light by way of news, so I trust this edition finds everyone well and enjoying fall!

Congratulations to Alessandro Giua (M.S. '90, Ph.D. '92, Comp. & Syst. Eng.), currently a professor at both Aix-Marseille University and the University of Cagliari, for being named an IEEE fellow for his contributions to discrete event and hybrid systems. Alessandro is a published author, editor, and member of numerous scientific boards.

Al Gross (B.S. Comp.Sci.) wrote in to say that he met up with AJ Leale (B.S. Mech.E.) and his bride for dinner while they were in Miami, providing independent verification that AJ did, in fact, get married. Congratulations to the newlyweds!

David Dwight joined Tru-Flex, LLC, in the Indianapolis, Ind., area as vice president and general manager of the North American Corrugated business unit. The business unit designs and manufactures flexible stainless steel hose components which are primarily applied in exhaust systems for heavy duty trucks.

Dianne and I continue to take advantage of our “empty nest,” traveling to London for a week of work (me) and leisure (her, a little bit for me). We also met our son in Tennessee, where he is on a co-op assignment, touring several whiskey distilleries on his 21st birthday. It was great fun and educational, too! They have distillation columns! We were looking forward to our daughter coming home for the summer and having both kids at home for a few precious weeks before they both returned to university in August.

If you find yourself in the Houston area, please do let us know! —Rob Sherman ’90, robsherman@hotmail.com

—1991—

Greetings, Class of 1991. It’s admittedly been a while since I last sent in a column, but life has been happening. In 2013, bought a house and moved. In 2014, new promotion and job assignment at my state agency, but also my mother passed away after health battles the previous two years. In 2015, our son Theodore was born. Now we are awaiting the birth of our second son, Joshua. I am also juggling various other tasks and extracurriculars besides engineering and fatherhood. So I apologize for the excessive delay, and pledge to be a better correspondent from here on out.

So let’s make up for lost time. Please send me any and all news of the last few years and we shall have lots of material for a good lengthy column. Please put reference to “RPI Class of 1991” in the subject line of all email correspondence. Otherwise, it might get lost in my email volume. Cell phone and email remains the same: (518) 577-3822, rov1969@gmail.com. Thanks!

We had a small but fun gathering at the 25th last October. About two dozen were registered to make all or part of the festivities. I ended up meeting Tony Hejna ’90, second from left, and his golf partner Matt Clarke, at left, played a practice round with partners Brandon Mader ’15 and Mike Souliotis ’15 at Pinehurst No. 2 in May. Both teams qualified for the USGA amateur 4-ball national championship and made it to round two. Hejna was captain of the 1990 men’s hockey team, and Mader and Souliotis played varsity golf for the Engineers.
about half. Our class dinner was at Plum Blossom. Thank you to Ljiljana Ciric, MBA '91, for sending me a photo. Enjoy, and I'll be back in the next issue! —Richard Vehlow '91; rev1969@gmail.com

—1992—

David Phelps (MBA) received an honorary Doctor of Public Service from Massachusetts College of Liberal Arts in May 2017. David was appointed in 1993 as president of Berkshire Health Systems, the primary provider of healthcare services in Berkshire County, and Berkshire Healthcare Systems.

Rachael Katz (MechE), co-owner of Greenfield Gallery, was featured in a January 2017 article in the Greenfield, Mass., Recorder. The article details her professional history and her many contributions to the Franklin County arts community.

Paul Falvey (MBA) was selected in 2016 to be the next president and CEO of Bank of New Hampshire. He has an impressive 30 years of experience as a bank executive, most recently serving as president and CEO of Martha's Vineyard Savings Bank.

Zane Mitchell (MBA) became dean of the Pott College of Science, Engineering, and Education at the University of Southern Indiana in December 2016. He joined the USI faculty in 2009.

Congratulations to David, Rachael, Paul, and Zane for these acknowledgements of your hard work and dedication.

Frank Fonseca wrote that he is living in Miami with his wife of 20 years, Tiffany, and twins 12-y/o Max and Nina. Frank is president of HJ Foundation, a national specialty deep foundation contractor that has set several world records in its industry. Frank enjoys time with the family including caddying for Max in national golf tournaments.

For those of you in flower land, and unable to attend the 25th Reunion in Troy this fall, drop me a line! If you find yourself in Minneapolis, I’ll spot you a beer at one of our fine local taphalls. —John Trammell ’92; johntrammell@gmail.com

—1993—

25th Reunion: September 2018 Pretty soon, it will be 2018, and the big 25 for the Class of ’93. The aching bones (once in a while), working with recent grads who are 25 years old, and the conversations of “when we retire,” remind me that the years go by quickly. When I read the class notes, I am encouraged to see how fruitful the years have been. I’m looking forward to the next 25!

Cheryl Porro was named one of the 43 most powerful female engineers of 2017, in honor of National Engineers Week (February 19-25). Cheryl is senior vice president, Technology and Products, at Salesforce.org. Salesforce.org is the nonprofit organization at the heart of the company’s “1-1-1” philanthropic philosophy, in which it donates 1 percent of its equity, 1 percent of its employees’ time, and 1 percent of its product to causes.

In this neck of the woods, I have accepted, and started a job as a quality engineer at Ecolab, in McDonough, Ga. —Ileana Gonzalez ’93; igonzalez@udan.rpi.edu

—1994—

Joanne Rapuano, MBA ’94, joined Robinson + Cole as counsel in the firm’s Business Litigation and Manufacturing Industry Groups. She focuses her practice on international trade and federal regulatory compliance matters, including government enforcement. She previously handled trade compliance matters for United Technologies Corp. and Sikorsky Aircraft Corp. —Bill Wheeler ’94; William.Wheeler@yahoo.com

—1995—

Please keep the updates coming. Tony Artino Jr. is still on active duty with the U.S. Navy and put on captain (O-6) on April 3. Please join me in congratulating Tony on his promotion.

Paul Stamas was named chief information officer at Northern Rivers, a not-for-profit organization. Stephen Paulone was appointed to a full-time faculty position in the business department at York County Community College.

Julie Berry’s latest book, The Passion of Dolssa, was named Printz Honor title by the American Library Association, which is the teen and young adult counterpart to the Caldecott and Newberry honors.

Major General Leopoldo “Lee” Quintas Jr. has been selected to succeed Major General James Rainey as commander of the 3rd Infantry Division. James Franchini was named new superintendent of the Averill Park School District.

I continue to work in the U.S. Navy Reserve and was also promoted to Navy captain (O-6) in January of this year. —Michael Van Poots ’95; Michael@Vanpoots.com

—1996—

Congratulations to Bryan Richardson on his induction into the Rensselaer Athletics Hall of Fame. During his RPI hockey career Bryan averaged 1.37 points per game, scored 80 goals, and had 113 assists. Even more than 20 years after graduation he remains number four in school history for assists and number eight for points. Congratulations, Bryan. —Hank Carbone ’96; hcarbone@hotmail.com

—1997—

In their news searches, the good folks at RPI uncovered the following moves: Donald Ousing is making his mark at Lehman as the university’s first vice president for equity and community. Gabriel Hodge was named a principal at Bohlin Cywinski Jackson, where leads the firm’s Wilkes-Barre, Pa., office with principals Bill Loose and Peter Bohlin ’58. Wayne Lee joined West Monroe Partners in March to lead their security and infrastructure practice and to grow their West Coast cybersecurity practice. Laura Casamento, president of Utica College, was honored as a 2017 New York State Woman of Distinction. And Karthik Bala (along with his brother Guha) launched Velan Studios, an independent video game developer based in downtown Troy. The brothers spent 11 years at Activision, so they are well-poised to create something amazing.

I was able to catch up with a few RPIers at a fundraiser in late April for Camp Kesem. If you haven’t heard of them, they are a nonprofit that supports children through and beyond their parent’s cancer. Neha (Shah) Biggs is on the national board of directors and was back in town from Chicago to kick off the inaugural Boston Magic Ball. Alicia (Sopko) Kabir recently joined the organization as their COO, making the leap into the nonprofit world. Taric Kabir is global product line leader for
digital products at GE, and Marsha (Aaron) Cor- 
dio was also there to support the cause, and is still 
 enjoying her work at Philips Health Tech. 
As long as I’m giving work updates, Brian Fitz-
patrick recently left CarGurus to join HubSpot. 
I’m still at Harvard Business School, nothing new 
on that front. Drop a line and let me know what 
you’re up to if you haven’t seen your name in this 
column for a few years!—Kristen Fitzpatrick ’97; 
lfitzpatrick@mba2003.hsbc

—1998—

20th Reunion: September 2018 Laura Ferran enjoyed a career in management consulting in 
the fields of technology and health care, but recently 
became head minister of the Vibrational Aware-
ness Center of New York. 
Elyse (Johnson) Santic, global project manage-
ment lead, corporate real estate services, at Cushman & Wakefield, was featured in an extensive 
interview in the July 1-24, 2017, issue of the New 
York Real Estate Journal as Executive of the Month. 
—Mike Johnson ’98; mjjohnson@alum.rpi.edu

—1999—

Sharon Berger married Taryn Curry last Novem-
ber. They met at Pace Law School, from which they 
both graduated in 2009. The wedding was 
held at the Highlands Pavilion in West Orange, 
Nj. It was a night to remember, in part due to all 
the RPI alumni in attendance, including Mara 
McCoy Robbins ’00, Matthew Robbins ’00, 
David Raphael ’99, Mark Supplee ’00, Michelle 
Regina Iacobelli ’00, Lena Yim ’00, Joe Pinheiro 
’99, Katie Dusett ’99, Lise Dirlam ’98, Sarah 
Cowell ’99, and Rene Gonzalez ’96. 
Sekou Bermis received the “Eyes of Texas” award 
for excellence in service to the University of Texas at 
Austin, where he is an assistant professor of 
management. The campus Eyes of Texas organization 
honors outstanding students, faculty, and staff 
who make noteworthy contributions to the Uni-
versity of Texas at Austin community. Sekou also 
was recently named a Filene Fellow by the War for 
Talent research center. 

Emily Grandstaff-Rice, FAIA, senior associate at 
Arrowstreet, was elected director at-large of 
the American Institute of Architects (AIA). She 
recently chaired the AIA’s Equity and Future of 
Architecture Committee and served as president 
of the Boston Society of Architects in 2014. Emily 
received a B.S. and B.Arch. from Rensselaer and 
as master’s in educational technology from Harvard. 
She was named a member of the American Insti-
tute of Architects College of Fellows in 2016. — 
Erica Kulesza ’99, erica.kulesza@yahoo.com

—2000—

Brian Pothis was inducted into the Northfield 
Mount Hermon Athletics Hall of Fame in June. 
After playing four seasons at RPI, he played nine 
seasons with four different teams in the NHL, play-
ing 362 games and scoring 118 points. His business, 
The Pothis Blueline Hockey Program, provides 
coaching and consulting to youth hockey players. 
—Bridget Olson ’00, Bridget@alam.rpi.edu

—2001—

Kareem Muhammad and his wife, Lynda, wel-
comed their first child, Amir Karim Muhammad, 
April 6, 2017. In addition, Kareem began his two-
year term as the Rensselaer Alumni Association 
(RAA) president July 1, 2017. —Mike Cooke ’01; 
themikecooke@yahoo.com

—2002—

G. Nagesh Rao was inducted into the Eisenhowe 
Fellowships alumni network in May. As a 2016 
USA Eisenhow Fellow (one of 10 selected across 
the U.S. and first member of the RPI community 
to join this elite network), Rao traveled to Sri Lanka 
and Vietnam to promote small business technology 
transfer and innovation research, and to enable 
new dialogue opportunities between startup hubs 
across the world. He earned his B.S. in materials 
engineering and philosophy from Rensselaer and 
currently serves as chief technologist for the U.S. 
Small Business Administration’s Office of Invest-
ment and Innovation, where he advises senior 
leadership at SBA and the White House on the 
SBIR/STTR programs across the U.S. federal gov-
ernment, and oversees the SBA Growth Accelera-
tor Program. —Elizabeth Trawinski Aitken ’02; 
ejello@alam.rpi.edu

—2003—

15th Reunion: September 2018 Sonia (Lopez) 
Reigles and Dr. Damon Reigles ’99 welcomed 
their second child, Ella Josephine, this spring. 
Sonia temporarily hung up her actuary hat run-
ing the production valuation team at Legal & 
General America until the summer. She put her 
engineering training to good use by building card-
board forts with their son, Otto, while Damon 
continued representing what RPI engineering is all 
about at Structural Group. 

My wife and I will be expecting our first child any 
day now. We are very excited and look forward to 
the joys of parenting. —Ed DerGurahian ’03; 
dergue@alam.rpi.edu

—2004—

If you are interested in writing the class notes for 
the Class of ’04, contact Meg Gallien, alumni news 
editor, at gallim@rpi.edu.

—2005—

Happy fall, Class of 2005! Jeff Bartkowski joined 
Kraken Sonar Inc., a marine technology com-
pany, as the director of business development. The 
Nuclear Regulatory Commission announced that 
Christian Scott is now the resident inspector at 
Duke Energy’s Catawba nuclear power plant, locat-
ed near York, S.C.

Michael Comer and Maria Milcetic Comer ’06 
welcomed their first child, Cassandra Marie, on 
Nov. 17, 2016. The happy family is enjoying their 
time in Boston, Mass. My husband and I also 
recently welcomed a child, Thomas Raymond, on 
April 18, 2017.

David Fannon is an assistant professor at North-
eastern University where, with colleagues Peter 
Wiederspahn and Michelle Laboy, he was awarded 
the 2017-2019 Latrobe Prize by the American Insti-
tute of Architects College of Fellows. The prize 
supports a two-year program of research leading to 
significant advances in the architecture profession, 
in this case furthering the team’s investigation of 
“Future-Use Architecture.” —Shannon Hitch-
cock Schantz ’05; smithitchcock@gmail.com

—2006—

Ashley Brandin and her husband, Tom, welcomed 
their first child, Bridget Ann Lobosco, into the 
world on April 13. Congratulations to the family! 
—Meghan Kate ’06, rpi06news@gmail.com

—2007—

Kirk MacDonald was named head coach and 
director of hockey operations for the Reading Roy-
als, the ECHL affiliate of the Philadelphia Flyers of 
the National Hockey League in May. He is the sev-
enth coach in the 16-year history of the team, 
and had been serving as interim head coach. —Alex 
Salinsky ’07, alexsalinsky@gmail.com

—2008—

10th Reunion: September 2018 Wedding bells 
are in the air! Brooke Thompson got married to 
Brent Warren on June 9. Ellen McNamara, Blake 
Huovie, and Kelly Barbera attended her bachelo-
rette party in Finger Lakes back in April. Quite the 
reunion! Congratulations, Brooke and Brent! 
And wedding bells are soon to come as Josh Reid 
proposed to his girlfriend, Dr. Ashley Sutherland, 
on April 29, 2017. Their engagement was captured 
in a video that quickly became an internet sensa-
tion, receiving over 3 million views within a week 
of being posted online! The video is a true testa-

Friends from the Class of ’08 gathered in the Finger Lakes area in April to celebrate the upcoming wedding of Brooke Thompson. From left, are Ellen McNamara, Brooke Thompson, Kelly Barbera, and Blake Huovie.
Brandon Graver has taken on a new position as aviation researcher with the International Council on Clean Transportation (ICCT) in their San Francisco office. His research identifies, refines, and promotes policies to reduce the environmental impacts of commercial aviation. Prior to joining the ICCT, Brandon conducted activity, energy, use, and emissions research for multiple modes of transportation for use by state and national governments in their decision-making process. In addition to his degrees from RPI, Brandon holds a Ph.D. in civil engineering and an M.S. in environmental engineering from North Carolina State University. Congratulations on the new gig, Brandon!

Please continue to keep your updates coming and make sure to like our Facebook page at facebook.com/RPIClassOf2008 and follow us on Snapchat, or whatever it is those kids are using these days. —Trent Gillaspie ’08; trent@alum.rpi.edu

—2009—

Three great updates from the Class of 2009.

First, congratulations to Jayanth Krishnamurthi for being awarded the American Helicopter Society’s 2017 Vertical Flight Foundation Scholarship. This scholarship is in its 50th year, and according to the AHS, previous winners have gone on to leadership positions in industry, academia, and governments. Nice work, Jayanth, and good luck finishing your doctorate (also at RPI)!

I also want to mention that law firm Fish & Richardson in Boston has announced five new associates, including Jessica Perry. After earning her master’s at RPI, Jessica went to law school at Boston University and now specializes in intellectual property litigation. It sounds like Jessica is on an exciting trajectory; congratulations!

And, Anita Rebarchak, M.S. ’09, a systems and validation engineer at Pratt & Whitney, was named a 2017 STEP Ahead Award Honoree. The STEP (Science, Technology, Engineering, and Production) Ahead award, given by the Manufacturing Institute, recognizes women in manufacturing fields who exemplify leadership in their companies.

—Jordan Hagaman ’09; jhagaman@alum.rpi.edu

—2010—

Hello, Class of 2010! Congratulations to Mike Weissman and Team Zootopia for their Academy Award win for the Best Animated Feature. If you haven’t seen it yet, it is definitely a must see! A big shout out to Stephanie Livsey for running the Boston Marathon for Team Eye & Ear and for raising over $10,000 in support of Mass General Eye & Ear. Congratulations to Kelsey (Cote) Enriquez and Chris Enriquez on the birth of their first child, Carter! A huge congratulations to Megan Bramhall for starting her law career in North Carolina at LexisNexus!

Rosie (East) Boedens co-founded a new law firm in March called Tephra Law, PLLC, providing real estate, business, and contract law services to the Puget Sound area. Congratulations and best of luck to you and your team! And congratulations to William Garrard, who earned his Ph.D. in information science at the University of Pittsburgh.

For those of you in the Cincinnati area, we are restarting the chapter and would love for you to get connected and involved—please reach out to me for more information! Our RAA board has been hard at work developing career programming through Rensselaer Alumni Connect, creating the RAA Scholarship Fund to support students, and sending out the second Alumni Attitude survey. Please consider supporting these initiatives and reach out to me if you have any questions!

Class of 2012—Congratulations to Katie Alexandridis for starting as a wind performance engineer at GE Renewables in Schenectady, NY.

Class of 2013—Best wishes to Hannah Trasatti and John Miller on their engagement. And, congratulations to Erin Murphy and Derek Fiedler on their wedding April 22nd in Texas! —Meghan Lenihan ’10; lenihmn@alum.rpi.edu

—2011—

Forbes named Julian Connor to its 30 Under 30: Art & Style for 2017. Julian is the CTO and co-founder of Grailed, which is a website and app for high-end secondhand menswear and streetwear.

Darryl Brown, currently a design engineer at General Motors, won the Modern Day Technology Award earlier this year at the 31st annual BEYA Global Competitiveness Conference. This conference recognizes African-American scientists and engineers for their efforts in STEM fields and for being a role model in their community. Congratulations, Darryl!

Brian Maleck married Sara Comer in October in Aiken, S.C. Brian also accepted a position as civil engineer for the City of North Augusta, S.C., and moved there with Sara late this past winter.

Sarah Barnard was named Volunteer of the Month in March by Eagle Neus in Syracuse for her work with the local Habitat for Humanity chapter and its affiliated AmeriCorps community efforts to overcome poverty. Graduating Rensselaer with a Bachelor of Architecture degree, Sarah also is a board member of the Central New York chapter of the American Institute of Architects. She also is renovating a 1913 home outside of Syracuse.

—Michael Zwack ’11; zwack@alum.rpi.edu

—2012—

Congratulations to Kayla (Cole) Culver, who was married on Oct. 22, 2016, to Bryan Culver! She also started a new job as a project management specialist with St. Peter’s Health Partners in Albany, N.Y.

Sandra Bedard is now a special education instructional assistant in the Washington, D.C., area, working with first-to-third grade students.

Help us reach 12 percent for 2012! Our class is hoping to shatter recent participation goals and reach a 12 percent giving rate in honor of our 5-Year Reunion. There’s still time to give at http://giving.rpi.edu. Every donation counts, no matter the size!
times this winter as she rounded the residency interview circuit. Rosemarie has graduated from SUNY Upstate and begins her pediatric residency at Children’s Hospital of Pittsburgh of UPMC this fall.

Cheers to all on these celebrations! Personally, each day merits recognizing accomplishments—big and small—and I’d love to hear more from you.
—Stephen Nock ’13; stephenknock@gmail.com

—2014—
Hello, Class of 2014! Hope you all had a fun summer and are having a great 2017. Here are some updates from our classmates over the past months:
First, let’s give a shout-out to Claudine Phaire on winning the Community Innovation and Leadership award from the Connecticut Technology Council’s 13th Annual Women of Innovation Leadership award from the Connecticut Technology Council’s 13th Annual Women of InnovationRock on Lake George.

In particular, congratulations to Sarah Straub, who was recently recognized by ASM International for her work as a leading materials engineer at ExxonMobil Chemical. Her work fulfills her with the positive influence she can have on the safety and reliability on her worksite. Also, her work allows her to work with passionate and smart people who are inspiring her every day.

Austin Tussing has a lot to smile about as the Times Union announced in November that he would be joining the North America Supply Chain department of the SI Group as a supply chain associate. He is responsible for sales and operations planning. Best of luck, Austin!

To everyone, best of luck on your future endeavors: “What we think, we become.”—Buddha.
—Maggie Murphy ‘16; margaretmurphy1009@gmail.com

—2017—
Hello and welcome, Class of 2017! My name is Conrad Mossl and I’m happy to be serving as your class secretary as well as your class correspondent. If you have updates you’d like the class to know, please send them to me at conradmossl@gmail.com. In addition, if you would like to keep updated with the latest and greatest, join the Class of 2017 Slack! Drop an email to conradmossl@gmail.com with the subject line “Class of 2017 Slack Invite” with the email you’d like to use, along with your first and last name, and we’ll take care of things from there. Thanks, and I hope to hear from you soon! —Conrad Mossl; conradmossl@gmail.com.
IN MEMORIAM

Joseph H. Leggett ’40, retired director of engineering, Bendix Corp., where he worked on the Apollo Saturn booster rocket; Feb. 26.

William P. Cloyes ’44, retired executive, NL Industries, pioneer in NL’s titanium metal production, and WWII Navy veteran; March 17.

Kenneth F. Paulovich ’44, whose career included aerodynamic design of B-36 bomber and nuclear weapons production; Feb. 16.


John R. Hamilton ’46, retired associate professor, Fordham University, after a career in corporate finance, and WWII Navy veteran; Feb. 15.


Ronald M. White ’47, retired general manager of gas operations, PSE&G of New Jersey, and WWII Navy veteran; May 6.

G. Marie Agnew-Marcelli ’48, M.S. ’52, retired senior scientist and research fellow, Jacob, Medinger & Finnegan; May 21.

James W. O’Brien ’49, metallurgical engineer, consultant, president, Great Lakes Powder Sales Co., and WWII Army pilot; April 20.

Richard A. Pfundstein ’49, MCE ’51, consulting civil engineer, vice president, Envirodyne Engineers, and WWII Navy veteran; May 20.

Freeland A. Savage ’49, retired chief development engineer, space systems, Hamilton Standard, sailor and boat builder; May 22.

John C. Wilson ’49, former chief engineer, Peck & Hale, manufacturer’s rep, and WWII Army Air Corps veteran; December 2016.

David W. Bray ’50, professor emeritus of electrical and computer engineering and former dean at Clarkson University; May 11.


Bernard N. Reinholds ’50, retired account manager, IBM Corp., and WWII Navy pilot; May 23, 2016.

Marvin J. Abrams ’52, M.S. ’55, retired senior market research analyst, IBM Corp., and college instructor; Feb. 19.

William F. Payne ’52, MMG ’60, former executive VP, external affairs, NYU, earlier at Rensselaer, and U.S. Navy veteran; May 13.

George W. Trumbull ’52, retired vice president, Caltex Trading and Transport, whose career took him to Bahrain and Spain; Feb. 5.

Charles H. Harrison ’53, engineer and patented inventor in the medical equipment industry, pilot, and ham radio enthusiast; May 13.


Donald R. Brutvan, MCH ’54, Ph.D. ’58, professor emeritus and former dean, Binghamton University, and WWII Army Air Force veteran; Dec. 30, 2016.


Richard A. Pfundstein ’54, MCE ’55, Ph.D. ’58, professor emeritus and former dean, Binghamton University, and WWII Army Air Force veteran; March 30, 2016.


Donald E. Stimson ’54, retired statistician, Siemens Lifesciences, and chief scientist, Siemens Healthcare; April 3.

John W. Craddock ’54, MCE ’56, professor emeritus and former director, Center for Applied Science, and textbook author; Feb. 20.

Peter A. Heffernan ’55, MCE ’58, former school administrator and consultant, U.S. Department of Education; Feb. 20.

William E. Shank ’55, retired statistician, Siemens Lifesciences, and chief scientist, Siemens Healthcare; April 3.

Donald E. Stimson ’56, retired statistician, Siemens Lifesciences, and chief scientist, Siemens Healthcare; April 3.

Richard L. Kramer Jr. ’94, quality manager at EMC, mentor and manager, active in sports and scouts; Aug. 18, 2016.

William J. Worthen ’95, FAIA, LEED fellow, a recognized sustainability and collaborative design leader; Jan. 28.

John C. Corelli, professor emeritus of nuclear engineering and engineering physics, and chair, nuclear engineering curriculum; April 10.

Heinrich A. Medicus, professor emeritus, physics, nuclear physicist, philanthropist, and champion of the arts; Feb. 26.

Alan S. Meltzer, professor emeritus, physics, and founding director of the Learning Center; Dec. 12, 2016.
“Don’t Fly in 10 Years”

A precautionary plea to the aerospace industry | LAWRENCE STOKER ’10

“DON’T FLY IN 20 YEARS,” my college teammate leaned over and sarcastically whispered.

It was April 2010; I was on my final leg of undergrad education. We were watching half of our aeronautical engineering peers give final presentations for Capstone Design.

The school produced an impressive amount of excellent engineers. But those are not the people who stick out in my memory. Perhaps that’s one of my personality flaws.

Regardless, that off-hand remark is proving to be prophetic.

While everyone is handwringing about the events in Washington, D.C., a real, insidious, and largely unknown threat is lurking in the bones of every aircraft. Time-based failure, specifically crack growth in metals (fatigue), appears to be an afterthought in many analyses I’ve reviewed in recent memory. We actually find cracks on aircraft all the time. With proper fleet management, we’re able to deal with these before they become catastrophic. However, recent interactions have me wondering if not everyone is as concerned as they should be about this failure mechanism.

Companies keep asking the question, “What do millennials want?” Apple was able to figure this out with the iPod. Most people didn’t know they wanted an iPod until they acquired one.

I submit to you that what millennials want is not coffee shops, nap rooms, and hammocks. They want safe spaces…to fly! They want aircraft to stay airborne. They want (whether they know it or not) engineering rigor behind every piece of aircraft structure.

Fellow engineers, we are the champions of airworthiness, and we need to take our task seriously.

Trust in new technologies is not our deliverance. Proper testing and characterization is required.

Why is there such little focus on aerostructures? It appears as if all you have to do is say the word “laser” (or synergy, for that matter), and you have all levels of management and customers saying “take my money!” Maybe we should coin the term Laser-Focus-Analysis-Aerostructures.

Could it be that the next aircraft crisis is right around the bend?

Our next wave of engineers is going to be intimately familiar with composites, 3-D printing, the various computer-aided design tools, and the latest-and-greatest technologies. Like anything else, all these need some form of validation, testing, and understanding.

It took us over 30 years to finally get metals right. The composites field is getting to that point after nearly 30 years. We still learn something new every day. The task is far from complete.

Lawrence Stoker is an aircraft structural integrity program engineer for the U.S. Air Force. His specialties involve taking finite element analysis, comparing and matching it to test data, and using that fusion to inform fleet management decisions. He graduated magna cum laude in 2010 from Rensselaer with a degree in aeronautical and mechanical engineering. He is a member of the Tau Beta Pi National Engineering Honor Society and the American Alpine Club.
"I remember holding my dad’s hand in the streets of New York City, looking up at the tall buildings and being fascinated by how they were built. I never would have thought I’d have the opportunity to actually build the buildings that I once dreamed about as a child. To my donor: Thank you for making my dreams come true.”
– Elijah Coley ’18, School of Architecture

Scholarship support enables students like Elijah to dream big, work hard, and tackle the world’s most pressing challenges. Your scholarship gifts help bridge the gap between the cost of a Rensselaer education and the scholarship support we need in our third century. Because you give, students are empowered to engage in studies that inspire a national commitment to global transformation, while propelling the nation forward through innovation, technology, and ingenuity.

Consider a gift in support of scholarship by making a donation at giving.rpi.edu. Your support helps Rensselaer to provide a world-class educational experience to our students, preparing them to meet the demands and challenges of the 21st century.
From concerts to class and club meetings, research projects, residencies, and the student-run Terra Cafe, EMPAC is a hub of campus activity at Rensselaer. With over 350 events taking place every year within its venues, production spaces, and common areas, students from all five schools use EMPAC as a dynamic forum for performance, study, work, celebration, collaboration, and intellectual exchange across the boundaries of major and expertise.