

SUMMER 2024



The Bent

Of Tau Beta Pi

THE ENGINEERING HONOR SOCIETY



**With Sea Levels Rising,
Can Miami Survive?**

**Introducing the 2024
TBP Fellows**



The Bent

Of

Tau Beta Pi

The Engineering Honor Society

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co-founder, *Association of College Honor Societies*; and
Affiliate, *American Association for the Advancement of Science*.

On the COVER: The Miami skyline from
over the ocean. The feature article
discusses the threat of rising sea
levels and how the city is fighting back
with engineering.

Artist: Dali Polivka



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COUNCIL'S CORNER

Marla A. Peterson, AZ A '83, TBI 2024 Vice President

THE VALUE OF MENTORING — when someone shares their knowledge, skills, and experience with another person to help them progress. (*Cambridge Dictionary*)

Have you ever thought about being a mentor? Throughout my career, I have had the honor to act as a mentor to high school and college students, as well as seasoned professionals where I worked. As Tau Bates, we should all take the opportunity to mentor! Your experience could truly make an impact on a student or a practicing engineer. And, the mentor often gains as much, if not more, than the mentee.

You may be thinking that you don't have the time to mentor, or feel that you have little to offer students or fellow engineers. I guarantee that you have much to offer — as **you** have been through their journey and succeeded! You possess shared values of academic and professional excellence rooted in personal integrity. You excelled in school. You are or have worked in the engineering profession academically or in the private sector/industry and are a lifelong learner. You have the network that can provide a benefit to others. And finally, you have worked through and survived a pandemic. Surely, you have stories to share on how you add value to our world.

Also, you can provide encouragement and hope beyond a career discussion. Many students in high school or college wonder if choosing engineering was the right decision. All they may need to know is that someone cares, and a few words could provide the confidence they need to accomplish their goal.

I have mentored through many unique challenges from personal to professional, in career development, and how to balance being a mom and an engineer. I have helped engineers understand when to raise their voices and how to pick their battles. It's challenging when one manager offers employees a more flexible schedule than another or provides advanced education opportunities, or an extra vacation day, when others may not be able to. Of course, there is always that manager who is just hard to work for.

Listening is the most powerful tool you have as a mentor.

At a recent TBI District Conference, I shared my experiences as an engineer and leader and discussed opportunities students have as they transition into careers. Several asked how to determine which offer is the best for them, should they negotiate a salary, are rotation programs beneficial, and should they get a technical or master's or an MBA.

Mentoring shouldn't be just telling someone what to do; instead, it should be a growing relationship that provides guidance, collaboration, patience, and ultimately knowledge from the mentor on how to build a career. To share not only the successes but also the failures of the mentor makes the experience even more impactful. The value comes when the mentee knows there is someone rooting for them to succeed and that this relationship can continue. In fact, I have mentored some individuals for over thirty years!

Since 2005, the Association has formally rewarded amazing mentors through the annual Tau Beta Pi-McDonald Mentor Award. Established by Marion and Capers McDonald, *NC G '74*, it celebrates excellence among TBI educators and engineers who have supported the personal and professional development of their students and colleagues as mentors or advisors. It recognizes those who have shown true concern for individuals, supported an environment for developing talents, and earned respect and recognition in the field and in the greater community.

A mentoring program can be a key element in TBI's five-year Strategic Plan to grow our membership. By planting the seed early in high school or college that you are a Tau Bate and that membership has benefited you throughout your career, the awareness can begin to develop.

During the last few years, it has been a challenge to initiate the equivalent

number of new members who joined in the pre-COVID years. To grow membership, it is clearly important for engineering students to be aware of Tau Beta Pi and its standards so they can strive to meet initiation requirements. I even asked my alma mater if I could talk about TBI during the Introduction to Engineering courses required of all freshmen interested in engineering. Again, an example of planting the seed.

In response to interest from both students and alumni, Tau Beta Pi is implementing a mentorship program through a partnership with **Ambition in Motion** to connect students and alumni with each other for professional guidance.

The mentors will be TBI alumni interested in volunteer experience while paying it forward to members seeking to gain career advice and help navigating through their professional lives.

Tau Beta Pi students and alumni are both eligible to be mentees. There is a collegiate program to help prepare current students for life after college and an alumni program to help professionals in their careers. The sign-up deadline for the Fall 2024 semester is September 24. If you are interested in having or becoming a mentor, visit: www.tbp.org/ambition-in-motion.cfm

We need mentors and/or mentees like you to make this program successful. Please consider supporting a member, student, or an engineer. Let's also instill the possibility of Tau Beta Pi early in a student's academic career to allow them to reap the rewards that we enjoy as Tau Bates.

MARLA PETERSON, recently retired from Honeywell and has a B.S. in systems engineering from the University of Arizona. She's been dedicated to aerospace product excellence for 40 years, serving in various leadership positions, and joined the TBI Executive Council in 2023.

YOUR LETTERS

Send letters to tbp.media@tbp.org. Text may be edited for length and clarity; not all letters can be published.

FROM THE EDITORS

Dylan Lane and Patricia McDaniel

Feature Articles

The article on TLAs reminded me of when the cartoon character Dilbert was assigned to the TTP project, which of course stands for "The TTP Project." Thanks for another interesting issue with this article as well as the Hip Replacement article.

Scott W. Sibley, P.E., PA '80

Engineering the Skeleton

Thanks Trudy for all your great writing, which I always enjoy and glad to hear of the successful hip replacement. Having been through knee replacement, and my friend now facing ankle replacement, I sympathize with the anxiety of facing these procedures – but the outcome, if done competently, is a game changer.

James L. Manganaro, MA B '61

I enjoyed Trudy's article discussing her experiences with a recent total hip arthroplasty (THA) and interest in the engineering behind hip implants and other joint replacement prosthetics. You are correct in questioning the replacement of natural living bone with metals that are much different in stiffness and modulus of elasticity characteristics. Years ago, I was involved in biomedical research efforts while employed with The Johns Hopkins University Applied Physics Lab. I was a mechanical engineer normally evaluating the designs of missile, spacecraft, and submarine systems in the intended use environments (high speed flight, shuttle launch, under-water loads, etc.). We got into some interesting, novel materials for some of these applications (titanium and other unconventional metals, ceramics, and advanced composites).

We also had the opportunity to apply similar engineering techniques to biomedical applications. Our team regularly met with surgeons, such as pediatric neurosurgeon Ben Carson, to help them with issues such as adapting adult neurosurgery instruments for better use with children. In the late 1980s, I had the chance to perform finite element analysis of THA implementations with an orthopedic surgeon. The idea was to examine the unique stress fields in a post operative THA to support clinical observations (implant failure, implant loosening, femur fracture post operative, as well as post operative mid-thigh pain experienced by many patients).

I was to apply the same engineering techniques used for missiles/spacecraft to

the biomedical environment. The first plan of action was to determine appropriate material properties for both cortical and cancellous bone through research papers. Along with the bone properties, we wanted to examine different standard implant materials, but also wanted to look at advanced composite materials more closely matched to the original bone. The ideal solution would have been to design a composite implant with directionally optimized material properties to better match bone material. Different methods of attaching the implants (bone cement, press fit, bone regrowth) were utilized as were different loadsets (normal walking gait, getting out of a chair, climbing stairs). We also worked with state-of-the-art computer display technology to dynamically display results in real time. It was an interesting project that led to a publishing bonanza in several engineering and medical journals; it won best paper in the *APL Technical Digest* for 1991, best paper at the MacNeal-Schwendler User's Conference, and was presented at technical conferences. I was able to transfer the same analysis techniques to other biomedical applications (composite mandibular implants for trauma patients and how to better implement tooth implants). It was a fun time exploring something a little more human than missiles and spacecraft.

I will have to take a look at how research has progressed over the past 30 years. Our article can be accessed here: secwww.jhuapl.edu/techdigest/Home/Archives

John A. Ecker, MD A '83

Three Letter Acronyms

I thoroughly enjoyed reading Arthur Johnson's article about TLAs and it reminded me of a song from the 1968 Broadway musical "Hair," which goes:

LBJ took the IRT
Down to 4th Street USA
When he got there
What did he see?
The youth of America on LSD

LBJ IRT
USA LSD

LSD LBJ
FBI CIA

FBI CIA
LSD LBJ

Philip E. Rakita, P.E., OH A '66

The Editorial Staff apologizes for the following errors:

In the Spring 2024 issue:

On page 39 of Chapter Eternal, it was incorrectly reported that Teresa Marie Jordan-Culler, *TXD '80*, was deceased. Fortunately, our readers informed us that she is in fact alive and well. Thanks to Nancy Reinhart Buenrostro and Stephen R. Karnoski, *TXD '80*, for letting us know.

Thank you to our readers for helping maintain the accuracy of the magazine. If you find an error or inconsistency, please email d.lane@tbp.org or call 865/546-4578.

Arthur Johnson's article on three letter acronyms reminded me of a requirement that I had while I was working in the Naval Nuclear Program. If an acronym was used in a document, it had to be spelled out the first time that it appeared.

I was told that Hyman Rickover, a U.S. Navy admiral and director of the U.S. Naval Reactors Office, who directed the original development of naval nuclear propulsion, was once reading a letter from a vendor who had not spelled out an acronym. Rickover was halfway through the letter before he discovered that the acronym was not what he thought it was. I was never told what happened to the vendor, but I don't think it was pleasant.

Victor J. Skowronski, Ph.D., NJ A '71

Having spent a number of years in marketing, I enjoyed reading Arthur Johnson's article on TLAs, which I guess even TBII leverages.

As I flipped to the last page of the article, I found it ironic that on the facing page there was your ad for NEST soliciting EGGS. As in many things, TBII is leading the way — this time in the popularization and use of four letter acronyms!

Todd W. Lue, CA A '85

WHO'S WHO IN TAU BETA PI

Recognizing Tau Bate accomplishments.

Jennifer K. Barton Ph.D.

Texas Alpha '97

has officially commenced her role as the 2024 President of the International Society for Optics and Photonics (SPIE). Jennifer is celebrated for her work in developing miniature endoscopes, medical devices typically used to detect abnormalities in the cells lining the gastrointestinal tract. She is director of the University of Arizona BIO5 Institute, professor, and distinguished chair in biomedical engineering.



Robert M. Metcalfe Ph.D.

Massachusetts Beta '69

was named a Benjamin Franklin Institute Laureate, receiving the 2024 Medal in electrical engineering "for his pioneering role in the design, development, and commercialization of Ethernet, an interface for networking and file sharing between computers." He is an MIT research affiliate and MIT Corporation life member emeritus, founder of 3Com Corp., and emeritus professor at the University of Texas.



Christi L. Patton Luks Ph.D.

Texas Delta '81

was elected by the American Society for Engineering Education membership to serve as President-Elect (2024-27). She is an accomplished academic leader and a distinguished teaching professor, serving as the associate chair for academic affairs in the Missouri University of Science & Technology dept. of chemical and biochemical engineering. Christi also advises multiple S&T student design teams.



Mary C. Boyce Ph.D.

Virginia Beta '81

was awarded the 2024 Benjamin Franklin Medal in Mechanical Engineering "For transformative contributions to our understanding of the physical behavior of polymers, materials made of long chains of molecules, leading to innovative product development of rubber and other soft materials. She is a professor of mechanical eng'g, Provost Emerita, and Dean Emerita of Columbia University Engineering.



Daniel B. Miracle Ph.D.

Ohio Mu '79

was elected in 2023 and now serves as vice president of the Minerals, Metals & Materials Society. He is a senior scientist in the Materials and Manufacturing Directorate at the U.S. Air Force Research Lab (AFRL). Daniel is also a member of the AFRL Research Advisory Council and received an honorary doctor of science from the Institute of Metal Physics, Ukrainian Academy of Sciences.



Lisa T. Su Ph.D.

Massachusetts Beta '91

received the 2024 Bower Award for Business Leadership from the Franklin Institute "for her transformational leadership of AMD, a leader in high-performance and adaptive computing and one of the fastest growing semiconductor companies in the world." She was also cited for being an accomplished engineer, champion for diversity and women in tech, and for having a bold vision of the next generation of AI/computing solutions.



Robert D. Hanson Ph.D., P.E.

Minnesota Alpha '58

received the Earthquake Engineering Research Institute's George W. Housner Medal for 2024, the most prestigious award of the institute, in recognition of his contributions to earthquake hazard reduction through education, research, international cooperation, and public service. He is a Univ. of Michigan professor emeritus of civil and environmental eng'g, where he served as department chair from 1976-84.



Joseph A. Musa P.E.

District of Columbia '08

was chosen as the National Institutes of Health (NIH) Engineer of the Year and honored by the National Society of Professional Engineers at the 2024 Federal Engineer of the Year Awards ceremony. A Sierra Leonean national, he works at NIH as an environmental engineer, completed his master's degree in less than 18 months, and is known for his efforts related to water management/supply in areas of need.



Vivek K. Goyal Ph.D.

Iowa Beta '93

was awarded a 2024 Guggenheim Fellowship from the John Simon Guggenheim Memorial Foundation. He is a professor and associate chair of doctoral programs for electrical & computer engineering at Boston University. A pre-eminent scholar, his research is on non-line-of-sight imaging — at the intersection of optics/photonics and computers and mathematics. Vivek is a TBII Fellow (1993) and NSF CAREER Award recipient.



NATIONAL INVENTORS HALL OF FAME

In partnership with the United States Patent and Trademark Office, the 2024 class of National Inventors Hall of Fame® inductees were honored on May 8-9 in Washington, D.C., at “The Greatest Celebration of American Innovation®” event. Two Tau Bates are among this year’s class of nine living inductees.



Andrea J. Goldsmith Ph.D.

California Alpha '86

Dr. Goldsmith created technical innovations including adaptive beamforming for multi-antenna Wi-Fi, which have shaped the performance of wireless networking and enabled fast, reliable wireless service around the world.



Asad M. Madni Ph.D.

California Epsilon '69

Dr. Madni led the development and commercialization of the MEMS gyroscope for aerospace and automotive safety. Commercialized as the GyroChip and first applied in the aerospace and defense industries, the technology has saved lives around the world through its use in aircraft and passenger vehicles.

AMERICAN ACADEMY OF ARTS & SCIENCES

The society announced that 250 outstanding individuals have been elected to the Academy in 2024. Congratulations to the Tau Bates who are new members.

Pedro J. Alvarez Ph.D., P.E.

Michigan Gamma '89

Class I, section 5 - Engineering & Tech.
Rice University professor

Mung Chiang Ph.D.

California Gamma '00

Class I, section 5 - Engineering & Tech.
Purdue University president

Edward F. Crawley Ph.D.

Massachusetts Beta '76

Class I, section 5 - Engineering & Tech.
MIT professor

Lise C. Getoor Ph.D.

California Sigma '86

Class I, section 6 - Computer Sciences
Univ. of California, Santa Cruz professor

Mark C. Hersam Ph.D.

Illinois Alpha '96

Class I, section 5 - Engineering & Tech.
Northwestern University chair & professor

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

In April, the AAAS announced its 2023 class of Fellows and recognized them in conjunction with the 150th anniversary of the AAAS Fellows Program. Below are the known Tau Bates who were elected.

Christina Chan Ph.D., *NYA '84*

Robert W. Heath Jr. Ph.D., *VA A '96*

Kemper E. Lewis Ph.D., *NYN '92*

Chen-Nee Chuah Ph.D., *NJB '95*

Waldemar Karwowski Ph.D., *TXB '82*

Susan G. Margulies Ph.D., *NJD '82*

Nancy M. Haegel Ph.D., *IN G '81*

Erin B. Lavik Ph.D., *MA B '95*

Douglas H. Werner Ph.D., *PA B '90*



Fighting a Rising Tide

BY ALAN S. BROWN

Rising oceans threaten to overwhelm Miami. The city is fighting back with old and new engineering. Can it survive?

Google “Miami” and “sunny day flooding” and photo after photo of flooded neighborhoods pops up. As the sun shines brightly, cars slosh down streets and pedestrians parade through puddles, some up to their knees. In one photo, tall buildings rise from the water covering Miami Beach island. Another shows a neighborhood 60 miles south of Miami that has been flooded for 40 days.

Flooding is nothing new in Miami. The city was built on a swamp and more than half of it rides less than six feet above sea level. Storms and hurricanes have always brought rains and high winds that push water from Biscayne Bay through the city’s streets.

Sunny day flooding is different. Caused by rising sea levels, it occurs during the highest tides, which push water into low-lying communities. They also force water through the porous limestone underneath Miami, where it percolates upwards, bubbling out of storm drains and covering streets.

According to the National Oceanic and Atmospheric Administration (NOAA),

high tide flood days have increased 400 percent to 1000 percent along the Southeast Atlantic and Gulf Coast since 2000.

It has not taken much of a sea level rise to do this. According to an international satellite radar survey, the Atlantic Ocean rose only 3.6 inches between 1993 and 2023. A *Washington Post* study of more than a dozen tide gauges from Texas to North Carolina puts the figure at six inches between 2010 and 2023. As rising temperatures melt glaciers and polar and Greenland ice sheets, the American Meteorological Society predicts a sea level rise of 10 to 12 inches by 2050.

Today’s infrastructure was not designed for this, said **Scott L. Douglass, Ph.D., P.E., ALE ’81**, a coastal engineer who founded South Coast Engineers. He points to Interstate 10’s Escambia Bay Bridge in the Florida Panhandle. In 2004, Hurricane Ivan’s storm surge knocked 58 spans off the bridge and misaligned another 66.

While modeling storm surges for a replacement bridge, Douglass realized

the original span had just barely collapsed. “If sea levels hadn’t risen, it probably would not have fallen down,” he said. “That’s how sensitive bridge elevation is to wave loads.”

With rising seas come other threats as well. Higher ocean and air temperatures generate hurricanes with stronger winds and greater rainfall. Their high winds have ripped apart thousands of buildings and pushed salty seawater into Miami’s freshwater aquifer. Their rainfall has wreaked havoc on the city’s 120,000 septic tanks.

Miami is not alone. Neighboring communities flood as well. So do other low-lying communities along coastlines around the world.

Yet, Miami continues to grow. The Miami Standard Metropolitan Area stretches from the tip of Florida 100 miles north to West Palm Beach. It added 550,000 residents between 2014 and 2024, bringing its population to 6.3 million. The city’s downtown is home to 18 of America’s 100 tallest skyscrapers, trailing only Chicago and New York City. More are on the way.

Yet, Miami, a study in contradictions, faces an uncertain future. Everyone is planning for seas to rise, most likely by 1.5 to 4.5 feet within the next 50 years. How can Miami win this battle? And what lessons can we learn about resilience from its fight to survive?

STORMY WEATHER

Located in a hurricane-prone mangrove marsh, Miami faces three primary challenges: storm surge, rain, and wind.

Draining the marsh lowered the area's elevation five to six feet. Protected by Miami Beach three miles offshore, storm surges flooded the city only during the largest hurricanes.

Rain posed a greater challenge. In the late 1940s, a series of violent hurricanes ripped through southern Florida. One created a flood that stretched from Miami to the other side of the state.

To manage flooding, Florida built an 1,800-mile grid of canals buttressed with hundreds of flood gates and pump stations. During the wet season, canals move flood waters into the ocean or into the 734-square-mile Lake Okeechobee, 90 miles north of Miami. During the dry November-April tourist season, coastal cities draw water from the lake.

Since it was completed in the early 1960s, South Florida's population has tripled and warming temperatures have made hurricanes larger and more dangerous, according to Erik Salna, a meteorologist and associate director of Florida Interna-

tional University's (FIU) International Hurricane Research Center.

Warmer temperatures energize storms, creating larger surges and increasing the amount of water (and rain) they hold, he explained. Warmth also slows air currents, prolonging storms' duration and the damage they inflict. These hurricanes have begun to overwhelm southern Florida's drainage system.

Rising sea levels also threaten Miami's drinking water, the Biscayne Aquifer. Its sponge-like limestone holds one of the world's largest bodies of fresh underground water, explained Jayantha Obeysekera, director of FIU's Sea Level Solutions Center and chief modeler for the South Florida Water Management District.

Florida recharges the aquifer by releasing water from its canals. In years of low rainfall, however, rising seas push saltwater into the aquifer. "Saltwater penetrates the limestone fast," he said. "Several wells on the coast have been abandoned, and once abandoned, we cannot get them back. This all happens underground, so we cannot build a levee to stop it."

High tides and rain also threaten Miami's 120,000 septic tanks, more than any other U.S. metropolitan area. "When water makes contact with septic tanks, it releases contaminants and then all that contaminated water moves through the groundwater into Biscayne Bay," Obeysekera said.

Hurricane winds also inflict damage. Since wind pressure is the square of velocity, even slight differences in speed ramp up forces quickly. In 1994, Hurricane Andrew demonstrated what could happen when its 157-miles-per-hour winds slammed into Florida south of Miami and then moved north and east. It displaced 250,000 people and destroyed or damaged tens of thousands of homes. Based on such recent hurricanes as Dorian and Patricia, researchers are now planning for 200-miles-per-hour winds and 20-foot surges.

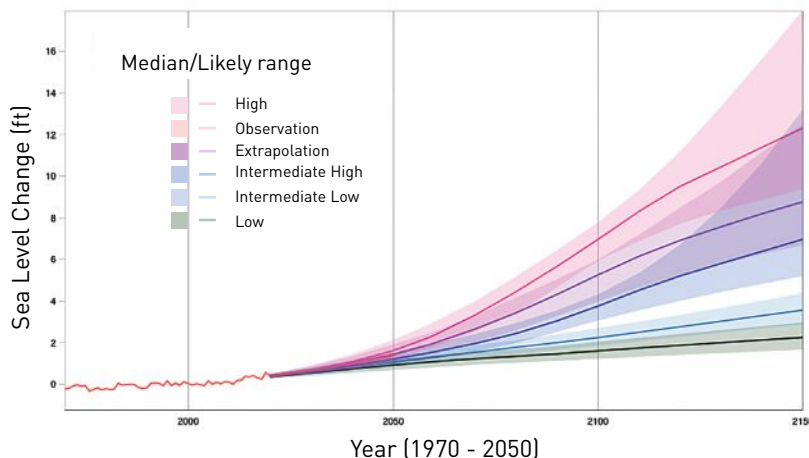
BARRIER ISLANDS

Most plans to preserve the Miami area start with taming ocean surges. Three miles offshore, Miami Beach takes the brunt of those forces from the Atlantic Ocean. The nine-mile-long and one-mile-wide barrier island started life as a ribbon of sand, dunes, and vegetation running parallel to the coast.

In nature, barrier islands move, Douglas said. Storm surges wash over them and slice channels through them, rolling sand over itself like a tractor tread. The city of 90,000 residents must fight nature if it does not want to disappear.

The island built 53 miles of seawalls to protect it from surges, recently mandating a minimum height of 5.7 feet. To cope with flooding through porous limestone, the city has created low-lying parks and landscaped areas to capture water and installed pumps to remove it. It is also raising street levels.

U.S. Interagency Sea Level Rise Projections for South Florida



Hurricane Andrew's 157 mph winds ripped apart this home when it drove through Florida and Louisiana.



Miami Beach has also embraced greener solutions. Offshore, it is evaluating a hybrid reef made of interlocked hollow hexagonal and trapezoidal members buttressed by rocks to drain energy from surges while fostering marine life. The city seeds its beaches with vegetation, which could mature into a scrub maritime forest if it survives long enough, Douglass said. Plants lock dunes in place during high winds but they are still vulnerable to surging waves.

Even so, Miami Beach must constantly replenish sand washed away by storms. “If you get the sand quality right, if it’s pure, plants thrive and fish and marine animals colonize the area,” Douglass said.

Finding the right sand is not easy. “Geophysical firms will survey the upper 20 to 40 feet of the seabed, looking for pure deposits from 6,000-to-10,000-year-old beaches and from inlets,” he explained. “Several harbor dredging companies have developed specialized equipment to harvest sand, but many of the best deposits have been used up.”

This is expensive. Douglass recalls a beach in Ponte Vedra in northern Florida. “They just built it but it looked like it had been there for 20 years,” Douglass said. “It was a \$40 million project, but it was not expensive compared with the \$10 million houses that lined the beach.”

SAVING MIAMI

Miami Beach blocks ocean surges in northern Miami, but water still rushes

in from south Biscayne Bay. To keep the water at bay, the city reached out to the U.S. Army Corps of Engineers.

The Corps’ 2020 plan included features often found in other coastal projects, such as levees, flood locks, pumps, raised roads, and hardened buildings. It also called for a six-mile-long seawall up to 20 feet tall.

Citizens (and real estate developers) went crazy. Miami’s shoreline defines the city and its lifestyle. No one wanted to lose it. The plan also infuriated low-lying communities who were left on the wrong side of the seawall. This led both sides to rethink their approach.

Miami now realizes that sea level rise is inevitable. “Instead, Miami is rethinking how we can live with the water,” said Patricia Gomez, Miami-Dade County’s acting chief resilience officer.

The Corps, meanwhile, broke from tradition. Its Congressional mandate calls for it to build cost-efficient infrastructure. That usually results in giant civil projects. In 2021, however, the Corps began embracing natural and nature-based solutions, such as living shorelines, artificial reefs and islands, and restored wetlands. They all appear in its most recent plan, which was developed after extensive community feedback.

One participant was Aaron DeMayo, founder of eco design firm Future Vision Studio and now chair of Miami’s Climate Resilience Committee.

After his Edgewater neighborhood flooded, DeMayo began driving around Miami to see which neighborhoods flooded and how the water got there.

He found that surges entered Biscayne Bay and Miami from the south, streaming around several smaller islands. To prevent this, he proposed a tall berm that would stretch to Miami Beach with a tidal lock to stop surges into the bay. Waterfront parks and berms, some up to 18 feet high, and tidal locks would also keep seawater from entering the Miami River, which flows through downtown. Decorating the berm were parks, pedestrian walkways, bicycle lanes, and living shorelines. In the bay, living reefs doubled as breakwaters.

The Corps’ new plan incorporates many of the same elements to create multiple lines of defense. These include human-made islands, reinforced dune systems, and artificial reefs to absorb surge energy. The Corps recommends restoring mangrove forests and coastal marshes to help filter water after a storm as well as elevating roads. It also wants to see more parkland and more living shorelines as well as the usual levees, pumps, and locks.

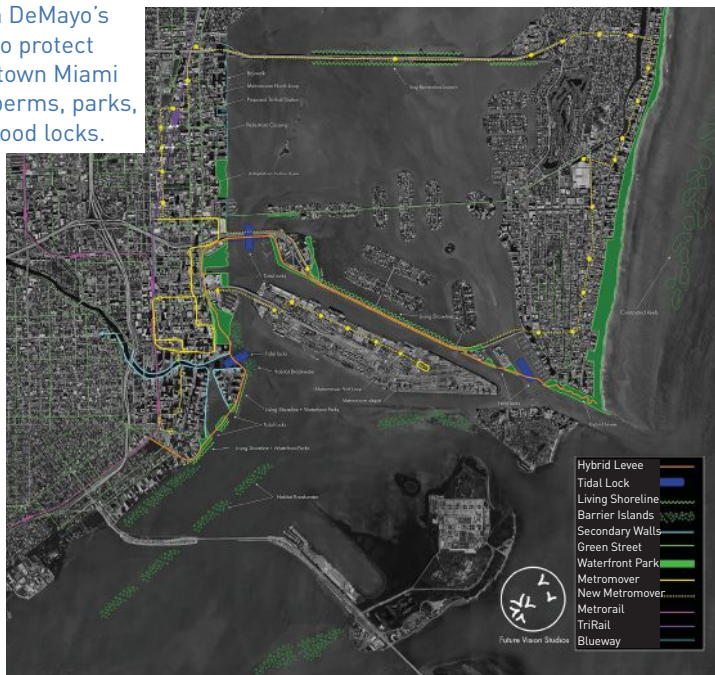
UNDERGROUND ISSUES

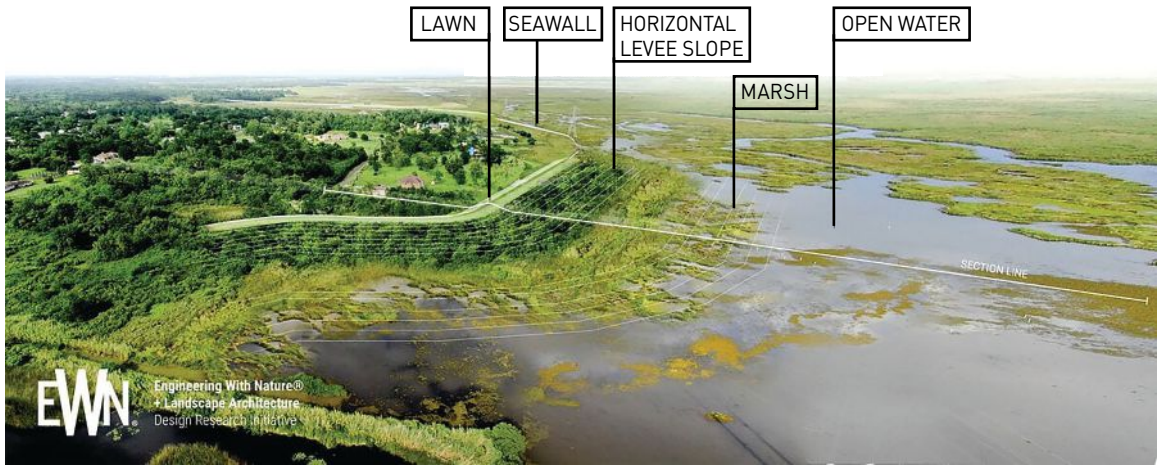
Even without surges, tidal flooding and rain pose challenges to Miami’s septic tanks. The county estimates that 9,000 septic tanks are vulnerable today and 13,500 will be vulnerable by 2040.

The problem is not engineering, it is money. The county expects individual homeowners to pay for connecting their homes to the wastewater system. Not everyone can afford it. Miami-Dade hopes to subsidize sewer links for low-income families with vulnerable septic tanks. “The county is starting the process to pursue grants to fund it,” Gomez said.

What happens to wastewater after treatment? Miami could pump it into the bay if it meets EPA standards. Or, like other cities, it could dilute partially purified wastewater by putting it in aquifers, lakes, or reservoirs, and purify it before use. Others recycle it to water commercial lawns and golf courses or to cool buildings, industrial processes, and power plants.

Aaron DeMayo’s plan to protect downtown Miami with berms, parks, and flood locks.





The U.S. Army Corps of Engineers has embraced the use of natural features to reduce the force of water surging onto its seawalls.

Miami could also store it under the Biscayne Aquifer, creating large water bubbles that could be pumped to the surface during droughts, Obeyesekera said. A 5-million-gallon-per-day pilot test is underway, but it is too early to say if it is scalable or not.

Saltwater is also degrading the Biscayne Aquifer. Conservation is helping. “We use 150 gallons of water per person per day with irrigation, landscaping, and lakes,” Obeyesekera said. “We should be closer to 50 gallons per day.” The more freshwater in the aquifer, the less space for saltwater.

Another solution involves directing water to the Everglades, where it seeps into the aquifer. In addition to restoring the Everglades, Florida is also building levee-enclosed artificial wetlands where native plants filter nutrients from agricultural runoff before directing the water to the Everglades.

Then there are the canals. They were built to discharge rainwater into the ocean via gravity flow. With rising ocean levels, however, they no longer release water passively. Instead, flood gates must remain closed to keep saltwater from entering the canals and flooding neighborhoods. One way to surmount this problem is to pump canal water directly into the ocean, Obeyesekera noted. Another is to direct water to large reservoirs and pump it out when the storm has passed.

In the long run, he says, Miamians may have to do what the Dutch have done for generations: build levees around neighborhoods and put in pump stations.

That leaves seawater surging through the porous limestone during high tides. “Some have suggested a seepage barrier underground to some depth,” Obeyesekera said. “That, in my mind, is not a practical solution.” Instead, pump systems must continue to empty flooded areas. Eventually, he said, communities will have to “vertically retreat” to avoid groundwater flooding.

TAKING A BLOW

Hurricane winds can do enormous damage. Andrew, one of the few Category 5 hurricanes to ever make landfall, destroyed 63,000 homes and damaged 124,000 others when it struck Florida, Louisiana, and the Bahamas. If it had hit Miami instead of moving south, it would have been worse, Salna said.

“People love the old cottages and restaurants that have been there forever,” he explained. “When a storm hits, all that old charm is gone. Think of it as a form of urban renewal. The buildings that replace them will look different but will do better surviving the next storm.”

Building codes are the best way to fight wind. “The good news is that codes proved they work,” said Marc Levitan, lead research engineer at the National Institute of Science & Technology’s National Windstorm Impact Reduction Program. “When Hurricane Irma

hit the Florida Keys [in 2017], the old buildings washed away but the new stuff survived.”

Codes focus on three key weak spots: building envelope (roofs and walls), openings (windows and doors), and load path (structural anchors).

Take roofs, for example. Once a few shingles give way, wind will get under the rest and tear them away. Wind then drives rain under the roof, soaking insulation until it collapses the ceiling. Hurricane-rated shingles, nails, roof sealers, and vinyl siding improve performance significantly.

Homes damaged by hurricanes usually have missing windows and doors. Once a storm pulls off a door or window, it can pressurize a house, pulverize its rooms and walls, and tear off its roof. Wind-rated metal doors, braced garage doors, and easy-to-close shutters help.

A positive load path anchors a building’s components to the ground. It might include roof straps to transfer loads from roofs to walls whose studs are screwed into a concrete foundation.

Building standards are likely to grow stricter as wind speeds increase, Levitan added. Most homes, shops, apartments, and factories are governed by Category 2 windspeed maps. Under new codes, they will need to withstand a one-in-700-year event. “That sounds highly unlikely, but there is a seven percent probability that it could happen over a 50-year period,” Levitan said.

BUILDING BOOM

Despite wind and flooding, Miami is undergoing a building boom, especially in the low-lying Brickell business district. This makes the city a laboratory for advanced coastal construction techniques.

New skyscrapers are prepared to live with water. Many have stairs leading up to their lobbies, making them easy to modify if the city raises sidewalk elevation (as it has done up to 2.5 feet in some places). Mechanicals are also on higher floors to keep them away from water. Their hurricane-rated laminated glass resists high winds. They sit on elevated platforms with solid gates to keep storm surges from rushing up their driveways.

To build high, Miami digs low. Porous limestone makes a poor foundation: it is weak and prone to water seepage. In the past, contractors excavated around tides to keep sites from flooding.

For the foundation of the Waldorf Astoria, which will become Miami's first 1,000-foot-tall building when completed in 2027, contractor Keller used a technique called deep soil mixing, said vice president Andres Baquerizo in a video. It involves mixing concrete directly with wet soil to form a stiff, almost impermeable material called soilcrete.

This is done using 10-foot-diameter drills whose business end looks like blender blades. The blades mix the soil while injecting concrete into it. Drilling an overlapping grid creates a solid soilcrete foundation that goes down well over 100 feet.

Soilcrete anchors tall buildings when wind tilts them, putting one side in compression and the other in tension, Baquerizo explained. The stiffer foundation also keeps the building from tilting or sinking over time.

The Waldorf, like most very tall skyscrapers, may sway in moderate winds. Another innovation, a tuned mass damper, suppresses that motion. Suspended on pistons, springs, or moveable arms near the top of a building, tuned dampers adjust their mass to resonate out of phase with a moving structure. This reduces swaying. The technology became a YouTube sensation in April 2024, when a damper on Taipei 101

kept the tower from rocking during a 7.4 earthquake in Taiwan.

One Thousand Museum, a 709-foot-tall, 62-story tower also features another safeguard against wind: a glass fiber-reinforced concrete (GFRC) exoskeleton. Designed to carry structural loads from the building's base to its podium, it replaces most of the interior pillars that would ordinarily support the building.

CHALLENGING UNCERTAINTY

Miami's response to climate-driven sea level rise and more intense hurricanes is engineering on a heroic scale. It may provide an inspiration, if not a blueprint, for other coastal communities.

Still, uncertainty remains. That starts with climate. The Southeast Florida Regional Climate Compact, a regional alliance to coordinate responses to climate change, has analyzed multiple forecasts. It projects sea levels will rise 7 to 14 inches in less than 20 years. It calls for architects to plan for a 1.5-to-4.5-foot sea level rise for buildings with 50-year lifespans and a 3-to-13-foot increase for those with 100-year service lives.

Those ranges are so wide because our understanding of climate continues to evolve. Scientists are still deciphering how warming temperatures drive ice sheet melting in Greenland and Antarctica and alter the ocean's moderating currents. New satellite Lidar measurements suggest low-lying areas will flood faster than radar data indicate. Warming rates also depend on emissions, which are determined by public policy.

Still, it could not be clearer that water levels are rising and engineers need to plan for this. That means reworking codes and standards.

The American Society of Civil Engineers, for example, plans to add "Future Conditions" to its structural engineering bible, Standard 7, in 2028. NIST's Levitan, who chairs the chapter's wind task committee, says his group plans to take input from a variety of climate models to develop new hurricane maps.

Douglass hopes to pin down sea levels for the Federal Highway Administration. While scientists project a wide range of outcomes, Douglass believes the most likely scenarios call for a two-foot rise by 2100. The more critical the

project, the greater the safety margin he builds in. "Adding an extra 20 or 25 feet to the height of a bridge is not that expensive, given the total cost of construction," he said.

Planning for uncertainty may require new ways of thinking. Obeysekera, for example, embraces the dynamic adaptive policy pathway (DAPP). It involves planning projects for modification as needs change.

"In Miami Beach, for instance, we might build a four-pump system but only install one pump now," Obeysekera explains. "Then we could add pumps as needed. This way, we make sure the land and infrastructure are available for an upgrade."

What might Miami look like in 20 or 40 years?

DeMayo expects a denser city as residents abandon low-lying neighborhoods and move into larger apartments on higher ground. Miami will have more flood-resistant infrastructure along the water's edge, and more parks and trees to provide cooling shade as summer grows hotter.

Salna says the real estate market is already changing. The most expensive new homes are now 20 miles off the beach. Within 40 years, Miami is likely to experience two or three direct hurricane hits. "Then all the old buildings will be gone, replaced by better, more water- and wind-resistant buildings," he said.

It many ways, it is a losing battle. Yet, as Obeysekera noted, the Dutch have lived below sea level for centuries.

Douglass remains an optimist. "I think we're figuring it out," he said. "We're getting better science, and also a better understanding of climate change within the political system. The incremental adaptations we're doing today are just going to continue to get bigger and better."

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ALAN S. BROWN has written broadly about engineering, technology, and science for more than 30 years. He is a board member of Science Writers in New York, a writer for The Kavli Foundation, a former senior editor of ASME's *Mechanical Engineering* magazine, and contributes to a wide range of publications. He graduated *magna cum laude* in 1974 from Hofstra University and can be reached at: insight01@verizon.net.

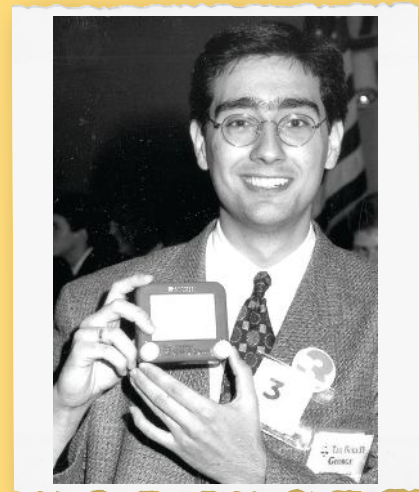
The STORY BEHIND The PHOTO

Announcing the Summer 2024 “Caption This Photo” Contest!

This photo from the 1998 Convention in Manhattan, KS, shows George Papayannis, *PA Z '99*, displaying his entry in the Pocket Etch-A-Sketch-the-Bent contest. The Etch-A-Sketches, complete with Kansas State logos, appeared to have been a Convention souvenir that year.

How to Enter: Send us your witty caption(s) for this photo from Convention archives. If the judges vote yours as one of the top three (and you have not been a previous winner), **we'll send you a TBP t-shirt of your choice!**

Submit your entry using this form: www.tbp.org/?CaptionSub or mail to *The Bent* of Tau Beta Pi, Caption Contest, P.O. Box 2697, Knoxville, TN 37901-2697.



**DEADLINE: THURSDAY, AUGUST 1
5 P.M. [ET]**

Questions? Contact p.mcdaniel@tbp.org

WINNERS of the Spring 2024 “Caption This Photo” Contest:

The judges deliberated over 76 entries submitted by 36 individuals. You can read all entries, including captions and results from recent contests, at www.tbp.org/bent-features.cfm#caption. If you are interested in serving as one of our judges, contact Pat McDaniel at p.mcdaniel@tbp.org.

1ST PLACE: TIE

“The loser has to polish the Bent!”

Susan M. Johnson, *OH G '86*

1ST PLACE: TIE

“Ouch! I think you ‘Bent’ my arm!”

Erik M. Krawczyk, *MI I '22*

2ND PLACE:

“Are you sure this is the proper way to do the Tau Beta Pi handshake?”

Richard D. Wright, *NY D '69*

3RD PLACE: TIE

“I love you too, man.”

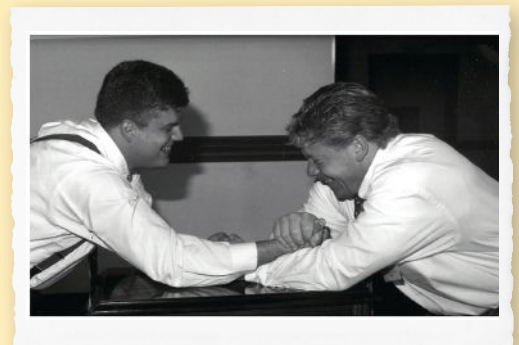
Joseph A. Sasso, *NY D '70*

3RD PLACE: TIE

“In a fine display of inter-collegiate collaboration, Tau Bates acting as arm wrestlers demonstrate the concept of leverage.”

James L. Barnhart, *WA B '84*

**CONGRATULATIONS TO OUR
WINNERS!**



▲ From the photo archives of the 1997 Convention held in Minneapolis, MN, we found an entertaining picture of two Engineering Futures Facilitators engaged in a friendly arm wrestling match. Matthew W. Ohland, Ph.D., *FL A '96*, is on the left and Gary W. Keyton, *TN Z '92*, is his worthy opponent.

TBP FELLOWS

Fellowships have been awarded to 31 members for a year of graduate study in 2024-25.

Sergei Akhmatdinov MI K '23
King No. 63 | Elec. & Computer eng'g

Cavin J. Alderfer CO Δ '24
Sigma Tau No. 50 | Civil eng'g

Dorian A. Bobbett NE A '23
Zimmerman No. 13 | Eng'g Education Res.

Kaitlyn I. Butler MO Δ '24
Hanley No. 13 | Space Systems eng'g

Anna Cetera RI B '24
Fife No. 245 | Electrical eng'g

Ashley S. Chon CA A '24
Fife No. 246 | Chemical eng'g

James R. Clinton CA Ω '24
Hennis No. 5 | Mechanical eng'g

Alrick J. Davis DC A '23
Fife No. 247 | Sustainability Science

Aleksandra A. Dudek CA E '23
Anderson No. 23 | Mechanical eng'g

Madhusudan "Sudan" Duwadi NJ Γ '22
Fife No. 248 | Biomedical eng'g

Shane P. Gallagher NJ B '24
Stark No. 45 | Materials Sci. & eng'g

Arianna C. Gehan NJ A '24
Fife No. 249 | Biomedical eng'g

Jacquelyn M. Gwynn MD Γ '24
Centennial No. 39 | Aerospace eng'g

Natasha K. Hunt PA A '22
Williams No. 45 | Bioengineering

Andrew Kim NY I '23
Dodson No. 11 | Chemical eng'g

Tessa Lytle MA A '23
Stark No. 46 | Mechanical eng'g

Steven W. Man CA Σ '23
Fife No. 250 | Robotics

Hannah S. McCollum AZ A '24
Fife No. 251 | Chemical eng'g

Firaol S. Midekssa NY K '21
Tau Beta Pi No. 843 | Biomedical eng'g

Utkarsh Misra FL Γ '23
Tau Beta Pi No. 844 | Elec. & comp. eng'g

Adedolapo "Majid" Ogungbire AR A '23
Matthews No. 27 | Civil eng'g

Ekin Gunes Ozaktas MD A '24
Swalin No. 8 | Electrical eng'g

Matteo Sanchez-Dahl DC Γ '23
Spencer No. 69 | Comp. Biomedical eng'g

Sayre P. Satterwhite IA B '24
Anderson No. 24 | Marine eng'g

Jehan L. Shalabi NJ Γ '22
Brandt No. 3 | Electrical eng'g

Deniz Sinar NY Δ '23
Nagel No. 27 | Bioengineering

Andrew "Andie" R. Tubbs TN E '23
Tau Beta Pi No. 845 | Biomedical eng'g

Zoe L. Vittum ME A '23
Tau Beta Pi No. 846 | Biomedical eng'g

Yancey D. Williams II AL Γ '23
Tau Beta Pi No. 847 | Biomedical eng'g

Jacqueline "Jackie" O. Yang NY A '24
Forge No. 12 | Electrical eng'g

Chujun "Julia" Zhao NY A '23
Tau Beta Pi No. 848 | Biomedical eng'g

The **Anderson Fellowships** are named for Mabel E. and Marshall Anderson, *MI Γ '32*, who was TBII Fellow No. 19 and left a bequest to the Society in 2005.

The third **Brandt Fellowship** is made possible thanks to a gift from Larry D. Brandt, *OR A '67*, which will permanently endow a fund in support of TBII member graduate studies.

Given for the 39th time, the **Centennial Fellowship** honors the Society's most outstanding fellow and commemorates Tau Beta Pi's 100th anniversary.

The **Dodson Fellowship** is named for the late Charles R. Dodson, *MD B '30*, who made a gift to the Association in 1998 and 1999.

The seven **James Fife Fellowships** are presented in memory of the father of the late member William Fife, *CA A 1921*.

The **Forge Fellowship** is named for Charles O. Forge, *CA Γ '56*, who left a bequest in 2010.

The 13th **Hanley Fellowship** is awarded in honor of Mary A. and Edward P. Hanley, *IL B '42*, TBII Fellow No. 84, who left a bequest to TBII in 1991 and 2021.

The **Hennis Fellowship** is awarded for the 5th time thanks to a generous gift from the late Lee A. Hennis, *CA Δ '65*, to continue mentoring young engineers.

The **Harold M. King Fellowship**, awarded for the 63rd time, honors the 1954-58 president of TBII, Harold M. King, *MA A 1910*, and is given to that recipient whose participation in his/her technical society is judged worthy of special mention.

The **Matthews Fellowship** is awarded in honor of R.C. "Red" Matthews, *IL A 1902*, who served as Secretary and Secretary-Treasurer from 1905-47 and as Secretary-Treasurer Emeritus in 1947-78.

The Fellowship Board has announced the selection of 31 engineering students from 417 applicants for graduate fellowships. More than \$8,900,000 in stipends will have been given by the Society when this 91st group of fellows completes its graduate work. These awards bring the total to 1,830 fellowships since the program began in 1929. The Association is grateful to volunteer members for their role in the selection process; they are recognized at www.tbp.org/?Fellows.

Sergei Akhmatdinov

King Fellow No. 63

Sergei graduated as a Presidential Scholar from Western Michigan University with a B.S.E. in computer engineering and a minor in mathematics. He served as the MI Kappa Chapter president for two years and is committed to advising the chapter post-graduation. During his undergraduate studies, Sergei engaged in diverse research initiatives. He worked on a predictive model for power consumption in FPGA designs under Dr. Lina Sawalha's guidance and, in collaboration with Dr. Simin Masihi, pioneered a pressure sensor design for haptic feedback in robotic surgery and aerospace. With Dr. Steve Carr, he contributed to a Linux Security Module that safeguards files against unauthorized changes. In addition to research, Sergei tutored mathematics, computer science, and physics at Kalamazoo Valley Community College. He will pursue a Ph.D. in electrical and computer engineering at the University of Michigan, focusing on embedded system optimizations for machine learning and machine vision applications. Driven by his deep passion for research and mentorship, Sergei intends to seek a career in academia.



Cavin J. Alderfer

Sigma Tau Fellow No. 50

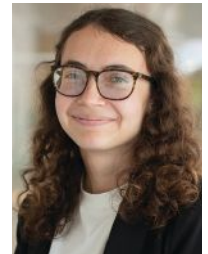
Cavin graduated cum laude from Colorado State University (CSU) with a B.S. in environmental engineering. He was a member of the University Honors College and served as the Colorado Delta Chapter treasurer his senior year. He participated in research, engaging in endeavors related to groundwater resource management, irrigation systems evaluation, and salt and nutrient fate and transport. Cavin was honored to receive 1st prize at the 2023 CSU Hydrology Days Showcase where he presented his research on groundwater depletion and recharge trends across the United States over the past century. He also served as a peer mentor and tutor for the Engineering Residential Learning Community, leveraging his knowledge and past experience to help ease the transition to college for first-year engineering students. Cavin intends to enter graduate school at Colorado State University and earn an M.S. in civil eng'g. He will participate in research on agricultural water management and crop productivity with Dr. Jeffrey Niemann and is very excited to spend another two years at CSU!



Dorian A. Bobbett

Zimmerman Fellow No. 13

Dorian graduated with distinction from the University of Nebraska-Lincoln in 2023 with a B.S. in chemical engineering and minors in engineering leadership and mathematics. As an undergrad, she was involved in the McNair Scholars Program, Tau Beta Pi, Engineers Without Borders, Engineering Ambassadors, Women in Engineering, and several other on-campus STEM outreach groups. Dorian's passion for outreach led her to become involved in engineering education research with Dr. Grace Panther, where she explored engineering faculty adaptability while teaching during the pandemic. Combined with her experiences as a teaching assistant for an introductory chemical engineering course, Dorian chose to pursue a Ph.D. in engineering education research at the University of Michigan. Currently, she is working with Dr. Karin Jensen on exploring the relationships of engineering doctoral students and their advisors, with the goal of improving graduate education and mentoring for engineering students.



The **Nagel Fellowship** is given in honor of Robert H. Nagel, P.E., NY Δ '39, for his service as TBI magazine Editor and Secretary-Treasurer from 1942-82 and as Secretary-Treasurer Emeritus in 1982-97.

The **Sigma Tau Fellowship**, given for the 50th time, perpetuates the name of Sigma Tau, a national engineering honor society founded at the University of Nebraska in 1904 and merged with Tau Beta Pi in 1974. It also commemorates Sigma Tau's former national president and secretary-treasurer, Carel B. Mapes.

The **Charles H. Spencer Fellowship** is given for the 69th time. Named for Tau Beta Pi's president from 1936-47, Charles H. Spencer, IL B 1913, it is awarded to a recipient whose contributions to his/her collegiate chapter are judged worthy of commendation.

The **Donald A. Stark Fellowships** are supported by a gift from a charitable trust named for the man who contributed much to progress in the fluid-power industry.

The **Swalin Fellowship** is named in honor of Helen M. and Richard A. Swalin, Ph.D., MN A '52, who left a bequest in 2015 to support TBI scholarships and fellowships.

The **Tau Beta Pi Fellowships** are supported by matching gifts from companies as part of the annual alumni giving program.

The **Edward H. Williams Jr. Fellowship**, awarded for the 45th time, honors the founder of Tau Beta Pi. It is given to a recipient who plans to earn a doctoral degree and become a professional engineering teacher, as was Dr. Williams, PA A 1875.

The **Zimmerman Fellowship** is named for Marlin U. Zimmerman Jr., MD A '44, who left a bequest in 2011.

Kaitlyn I. Butler

Hanley No. 13

Kaitie graduated from the Univ. of Missouri-Kansas City (UMKC) in 2024, summa cum laude, with a B.S. in mechanical eng'g and as a Marion H. Bloch Scholar. Senior year, she served as UMKC president of both AIAA and the MO Delta Chapter, where she notably hosted the annual Flight Symposium and the TBII career panel featuring VP's, PM's, and CTOs. She also served as local SWE Chapter VP, followed by the role of treasurer. Previously, Kaitie was the founder and president of UMKC's first AIAA Design Build Fly engineering team and continues to support and encourage the development of the team. This summer, she'll perform contracted work for National Security Innovation Network, followed by continuing her research and graduate studies on unmanned aerial systems under Missouri Institute for Defense and Energy. She aims to further technological advances in the defense industry through collaboration of common mission goals and the pursuit of excellence.



James R. Clinton

Hennis Fellow No. 5

James is graduating from Harvey Mudd College, where he majored in engineering, was a 2023-24 TBII Scholar, and served as CA Omega Chapter president in 2023-24. He is interested in researching mechanism design for robotics and has conducted research in spring-driven robotic mechanisms with Harvey Mudd Prof. Mark Ilton, to understand how different physical parameters influence system performance. James also worked with Prof. Anthony Clark at Pomona College, designing a locomotion system that transforms between wheeled and spoked configurations. He has also participated in an REU at Carnegie Mellon Univ., working with Prof. Zeynep Temel to design mechanisms to enhance locomotion capabilities of a reconfigurable robot swarm. In the fall, James will pursue a Ph.D. in mechanical engineering at the Univ. of California, Santa Barbara as an NSF Graduate Research Fellow, hopes to pursue a career in academia, and enjoys playing the viola and working on art projects.



Anna Cetera

Fife Fellow No. 245

Anna, a first-generation graduate from the University of Rhode Island (URI), has earned both a B.S. in biomedical engineering and a B.A. in Spanish through its five-year, dual-degree International Engineering Program. Fluent in Spanish following her immersive year at the Univ. of Cantabria in Spain, Anna has actively contributed to her community as the SWE outreach chair and as RI Beta Chapter recording secretary, where she played a key role in the unique experience of initiating Dr. Marc B. Parlange, URI President, in 2024. Her research at URI's Translational Neurorobotics Lab, under the guidance of Dr. Reza Abiri, involves developing noninvasive brain-computer interface (BCI) systems and assistive neurobotic devices aimed at restoring upper-limb function. Anna is continuing her education at URI, pursuing an M.S. in electrical eng'g with a focus on real-time systems and neural networks to advance noninvasive BCI systems. She has aspirations to earn a Ph.D. in BCI development and to establish her own lab.



Alrick J. Davis

Fife Fellow No. 247

Alrick is a distinguished summa cum laude graduate in chemical engineering from Howard University in Washington, D.C., with political science and mathematics minors. As president of the Howard Caribbean Students' Assoc. and DC Alpha Chapter treasurer, Alrick has contributed to diversity and community engagement. His academic excellence is recognized as a Jamaican Rhodes Scholar Finalist and an NSBE-Cummins Inc. Integrated Pipeline Program Scholar. Alrick's professional experience includes impactful policy development and environmental advocacy internships, notably with the U.S. House of Representatives. He founded the FiDiYutes Initiative, promoting community service between Jamaican students and their homeland, underscoring his commitment to global challenges like water equity. Alrick has researched combustion and after-treatment analysis in emissions system catalysts and implemented new acid digestion methods. He aims to merge innovative engineering solutions with sustainable policies to diminish water equity, treatment barriers, and implications on waterborne diseases, in underserved regions.



Ashley S. Chon

Fife Fellow No. 246

Ashley graduated from the University of California, Berkeley, in 2024 with a B.S. in chemical engineering. She served on the CA Alpha Chapter service committee, held social chair and IVP positions in AIChE, and competed with Berkeley's ChemE Car team. Ashley conducted research in Dr. Nitash Balsara's lab, studying the crystallization of Polystyrene-b-Polyethylene Oxide Diblock Copolymers. She's interned at Bayer, testing steam traps, creating energy control procedure documents, and ensuring safety, compliance, and efficiency at every stage of pharmaceutical production. Outside academics, she enjoys playing soccer, binge-watching shows, and taking spontaneous trips. This fall, Ashley will begin her master's degree in MIT's master of science in chemical engineering practice program. In the future, she aspires to work in the biotechnology/pharmaceutical field, hoping to help solve and mitigate current medical challenges.



Aleksandra A. Dudek

Anderson Fellow No. 23

Aleksandra graduated summa cum laude from UCLA with a B.S. in mechanical engineering and a technical breadth in computer science. While an undergrad, she worked with the CA Epsilon Chapter, providing open tutoring sessions for physical science courses. She also served as director of tours for Engineering Ambassadors, as a member of the SWE outreach committee, and as an enthusiastic member of the Den. She joined the mechanical eng'g Ph.D. program at the Univ. of Michigan (UM) as a member of the Barton Research Group, where she is focusing on controls and human-robot interaction. Specifically, her work aims to improve human robot collaboration in bidirectionally coupled situations by leveraging game-theoretic modeling and learning control to optimize the robotic behavior. At UM, she's involved in the Mechanical Eng'g Graduate Council and GradSWE, working to connect graduate students with the greater Ann Arbor community. In the future, Aleksandra plans to work on surgical robotics to further the field of medicine, while teaching to inspire the next generation of engineers!



Madhusudan Duwadi

Fife Fellow No. 248

Sudan graduated with a B.S. in biomedical engineering from the New Jersey Institute of Technology (NJIT), where he completed the National Academy of Engineering's Grand Challenges program — an NJIT first. He has served as

NJ Gamma Chapter VP of external affairs and as Greater Boston Alumni Chapter president. As an undergrad, he began his research career as a research assistant in an auditory neuroscience lab, studying how the brain processes sounds in

noisy environments. He is now a Ph.D. candidate and an NSF Neurophotonics research trainee at Boston Univ., specializing in biomedical engineering and neuroscience. His research is focused on understanding brain signals during audio-visual attention tasks in noisy scenarios, using statistical models and machine learning. These projects aim to translate neuroscience applications into practical daily uses, utilizing fNIRS and EEG for brain-computer interfaces, enhanced hearing aids, and AR-VR technologies.



Jacquelyn M. Gwynn

Centennial Fellow No. 39

Jackee is a graduating midshipman at the United States Naval Academy. She will earn a B.S. in aerospace engineering with a focus in astronautics. As an Admiral Frank L.

Bowman Scholar, she conducted research with Dr. Jin Kang on a post processing method for additively manufactured hybrid rocket fuel grains with the potential for applications in naval weapons systems. Jackee also worked as the software lead on a capstone team to develop an attitude

determination and control system for the Naval Academy Standard Bus CubeSat. She served as MD Gamma Chapter president and Naval Academy Parachute Team captain, completing 400+ skydives as a competition and demonstration parachutist. Upon graduation, Jackee will be commissioned as an Ensign in the U.S. Navy, earn her master's degree in aerospace eng'g at Georgia Tech, and work as a military graduate research assistant. Then she will attend Nuclear Power School before serving her naval career as a submarine officer.



Shane P. Gallagher

Stark Fellow No. 45

Shane graduated summa cum laude from Rutgers University with a B.S. in materials science & engineering in May 2024. He is passionate about mentoring younger students and served as the Rutgers' Material Advantage

chapter president and the NJ Beta Chapter vice president. In his free time, he enjoys cooking and staying active. At Rutgers, he was involved in undergraduate research and studied ultra-high temperature ceramics under

Dr. Richard Haber. He also worked as a materials characterization intern at Pratt & Whitney, where he developed a passion for aerospace materials. Starting this fall, Shane will be pursuing a Ph.D. in materials science & engineering at the University of California, Santa Barbara, where he will study high-temperature ceramic composites. After graduation, he is eager to work in materials research & development and help to revolutionize the aviation industry.



Natasha K. Hunt

Williams Fellow No. 45

Natasha graduated from Lehigh University earning B.S. and M.S. degrees in bioengineering, concentrating in biomaterials and biomechanics. Currently, she is pursuing a Ph.D. in bioengineering through the UC Berkeley-UCSF

Joint Program. At Lehigh, Natasha served as the PA Alpha Chapter secretary, spearheaded an after-school program to bake and deliver baked goods to a local homeless shelter, served as president of the university swimming club, and long-held an officer position in the Lehigh outing club. Her research at Lehigh focused on designing polymer scaffolds that degrade in response to cell growth during regeneration of joint cartilage affected by injury or diseases such as osteoarthritis. In her Ph.D. work, Natasha aims to continue developing therapies and treatments to address osteoarthritis, but now through the lens of the gut microbiome. She is excited to leverage the combined engineering expertise of UC Berkeley and the clinical advancements at UCSF. She aspires to lead her own university lab after graduate school.



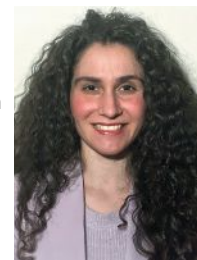
Arianna C. Gehan

Fife Fellow No. 249

Arianna is graduating as the valedictorian of Stevens Institute of Technology with a B.E. in biomedical engineering. She joined the NJ Alpha Chapter in 2022 and served as the alumni outreach chair. At Stevens,

Arianna worked in a lab studying deep brain stimulation in Parkinson's Disease. Additionally, she's been involved on campus in various organizations including Alpha Eta Mu Beta, Theta Phi Alpha, the school newspaper, and poetry club. Off campus, Arianna is

involved in the diabetic community where she regularly volunteers with the Juvenile Diabetes Research Foundation and meets with her congressional representative to advocate for research funding. In 2022, she co-founded Daia, where she's building digital solutions to make living with diabetes safer. Inspired by her own experiences of living with type-1 diabetes, Arianna has been building an app to give diabetics more control in sharing their blood sugar. In 2024, she will attend Columbia University to further her studies focusing on diabetes software.



Andrew Kim

Dodson Fellow No. 11

Andrew is a chemical engineering student at The Cooper Union School, completing his bachelor's and master's degrees simultaneously. He's always been interested in batteries that power modern technology, the code that runs society,

and technologies that protect the environment. He started his research in bioenergy with carbon capture and storage, freshman year, under Dr. Amanda Simson and currently researches electrospun polymers for carbon capture. Andrew took a three-year academic gap to serve in the Republic of Korea military, where he was awarded a certificate of excellent service & character by the Mayor of Seoul. During this time, he published ten first-author papers on various nano-materials for energy technologies, including sulfur batteries, supercapacitors, and solar concentrators, under the guidance of Dr. Rajkumar Patel of Yonsei Univ. Now, he is investigating how the introduction of solvents affects quantum chemical predictions of polysulfide adsorption in sulfur batteries and plans to merge his interests in machine learning and AI to approach complex chemical problems.



Tessa Lytle

Stark Fellow No. 46

Tessa graduated with high distinction from Worcester Polytechnic Institute (WPI) in 2023 with B.S. and M.S. degrees in mechanical eng'g. Her WPI major qualifying project consisted of designing and building a 3D printed humanoid robot and simulating bipedal locomotion. As an undergrad, Tessa was involved in several organizations, serving as president of Pi Tau Sigma, Engineers Without Borders, and ASME. As a synchronized figure skater,



Tessa represented Team USA from 2019-23 as a member of the *Haydenettes*. She's a two-time national champion, international medalist, and two-time world competitor. In 2023, Tessa conducted research at Los Alamos National Lab related to multi-axis vibration testing and modal analysis and presented a paper of this work at the 2024 International Modal Analysis Conference. Her Ph.D. research at WPI focuses on phase-based motion magnification and vibration analysis. This summer, Tessa will conduct research at Sandia National Lab as part of the Nonlinear Mechanics and Dynamics Research Institute.

Firaol S. Midekssa

Tau Beta Pi Fellow No. 843

Firaol is a third year Ph.D. student in the biomedical engineering department at the University of Michigan. Her research focuses on modulating biomaterials, specifically hydrogels to enhance prevascularization, and graft-host vascular integration for various clinical applications. Prior to graduate school, Firaol studied at the University of Rochester, graduating magna cum laude with a biomedical eng'g B.S. degree in 2020.



At Rochester, she was part of NSBE, SWE, and the Biomedical Engineering Society. Firaol participates with similar organizations at the graduate school level and is also heavily involved in DEI initiatives on campus. For example, she currently serves as the co-leader of the biomedical engineering graduate student council DEI committee. Additionally, Firaol co-founded and serves as co-advisor of the Biomedical Engineering Graduate Student Application Assistance program. After her Ph.D., she's interested in applying her knowledge and skills in the tissue engineering and regenerative medicine industry sector.

Steven W. Man

Fife Fellow No. 250

Steven graduated magna cum laude from the University of California, Santa Barbara in 2023 with a B.S. in mechanical eng'g. He conducted research in Prof. Elliot Hawkes' soft robotics lab, focusing on building embryo-



inspired robots capable of locomotion through vibration and convergent extension. Additionally, Steven gained experience through summer internships at the Johns Hopkins Applied Physics Lab and SpaceX, where he contributed to projects such as the NASA Dragonfly mission and Starlink Space Lasers. Currently, he's pursuing a Ph.D. in robotics at Carnegie Mellon Univ. under the supervision of Profs. Aaron Johnson and Sarah Bergbreiter. His research interests lie in developing physically intelligent systems to navigate unstructured environments, thereby advancing exploration and search & rescue technologies. Steven is also dedicated to outreach aimed at broadening access to robotics and engineering for underrepresented groups, collaboration with campus organizations introducing middle and high school students to STEM research.

Utkarsh Misra

Tau Beta Pi Fellow No. 844

Utkarsh is graduating with honors from the University of South Florida (USF) in June, earning both a B.S. and M.S. in electrical engineering. This summer, he will begin his Ph.D. studies at the University of Texas at Austin's ECE program, where he plans to focus on developing 2D material-based devices for advanced computing applications. Throughout his time at USF, Utkarsh's research has centered on the thermal and electronic properties of nanomaterials and semiconductor nano-devices. His passion for research and global collaboration took him to pursue research projects at academic institutes in Germany and India, supported by the DAAD Rise Fellowship 2022 and the Visiting Researcher Fellowship 2023. In USF leadership roles, Utkarsh served as the IEEE Chair, Undergraduate Research Society Chair, IEEE vice chair, and FL Gamma Chapter social chair. Alongside his academic pursuits, he is a member of the USF Men's Rowing team, competing in various local and national collegiate tournaments, and representing his university.



Hannah S. McCollum

Fife Fellow No. 251

Hannah is graduating summa cum laude from the University of Arizona (UA) Honors College with a B.S. in chemical engineering and a minor in statistics and data science. She is involved with several organizations, including Theta Tau and serving as AIChE chapter president. She's been awarded multiple scholarships, most notably UA's Chapman Scholarship, as an outstanding junior in chemical, mining & materials science eng'g. Her research



focused on studying the effects of chlorination on reverse osmosis membranes to change their surface characterization and decrease fouling and scaling. In the summers, she had two internships at Procter & Gamble and Integral Consulting Corp. Hannah has a passion for teaching, especially underrepresented populations in STEM, and has worked as a STEM tutor for high school students and a preceptor throughout college. At Stanford Univ., she will pursue her Ph.D. in chemical engineering and plans to study electrochemistry or catalysis with applications in carbon capture and environmental sustainability.

Adedolapo M. Ogungbire

Matthews Fellow No. 27

Adedolapo is pursuing a Ph.D. in civil eng'g at the University of Arkansas (U of A) as a distinguished doctoral fellow. He is from Osun State, Nigeria, and his academic journey has been marked by distinction, beginning with his undergrad studies at Osun State Univ., where he emerged valedictorian. He continued his studies at the U of A, earning a master's degree.



Under the supervision of Dr. Suman Mitra, his research centers around sustainable transportation, machine learning, and micro-mobility. He is also interested in travel behavior and how information technology affects travel and urban settlements. Adedolapo is involved in various societies and volunteer groups where he enjoys sharing about cultures from his home country and interacting with professionals. These societies and groups include the Inst. of Transportation Engineers, Intl. Culture Team, African Student Organization, and his participation has earned him several awards, most notably the Arkansas Traveler Award. He plans to pursue a career as a transportation data scientist, focusing on improving sustainable transportation infrastructures.

Ekin Gunes Ozaktas

Swalin Fellow No. 8

Ekin Gunes graduated with a B.S. degree from Johns Hopkins University, double majoring in electrical eng'g and physics, with a mathematics minor. He has received numerous academic awards, including the Muly & Bander Research Awards, the Whitehead and Huggins Awards, the Max Kade Fellowship for research in Germany, and an EPFL ERIP Fellowship for research in Switzerland. His research focused on optoelectronic device and solar cell design involving 2D materials, plasmonic nanostructures, metamaterials, and investigating the effects of disordered and aperiodic arrangements. His work on topological edge modes in frustrated antiferromagnets and on photonics applications of machine learning led to journal publications, conference presentations, and winning a best poster award. He served as MD A Chapter president, is a member of Sigma Pi Sigma, and attended 20+ Model UN conferences in leadership positions. Next, Ekin Gunes will pursue graduate studies at Stanford Univ.



Jehan L. Shalabi

Brant Fellow No. 3

Jehan began her Ph.D. in electrical engineering at Purdue University at the age of 20, supported by an NSF Graduate Research Fellowship. She earned her B.S. in electrical eng'g summa cum laude from the New Jersey Institute of Technology. At Purdue, she specializes in electromagnetic fields and optics within the Electrodynamics Group, focusing on infrared detection and enhancing thermal imaging capabilities. She works on multiple projects, including heat-assisted detection and ranging, the development of a next-generation ultrafast nanoscale infrared bolometer, and enhancing night-time autonomous navigation by leveraging thermal imaging. Jehan's goal is to become the first Palestinian-American astronaut. She interned at NASA Goddard and as a research intern in the MIT Summer Research Program, where she worked on autonomous vehicle navigation. Jehan was also an analog astronaut at the Hawai'i Space Exploration Analog and Simulation, where she served as the space engineer and conducted research on the Mauna Loa Volcano.



Matteo Sanchez-Dahl

Spencer Fellow No. 69

Matteo graduated summa cum laude from George Washington University (GW) with a B.S. in biomedical eng'g and a CS minor. A 2022-23 TBTI Scholar, he served as DC Alpha Chapter corresponding secretary, GW Society of Hispanic Professional Engineers (SHPE) Chapter president, and as an undergraduate student representative on the National Board of Directors. As a GEM Associate Fellow pursuing a master's in computational BME at Carnegie Mellon Univ. (CMU), Matteo has explored his intellectual curiosities and engaged in service with local community partners. Serving as the CMU graduate student chair of SHPE and as a TBTI District 3 Director has enabled him to participate in alumni panels and host outreach presentations to help students maximize their personal and professional success. Matteo believes employing empathy to connect with new perspectives is part of the essence of scientific exploration and aims to leverage his leadership and engineering expertise to support multi-sectoral initiatives.



Deniz Sinar

Nagel Fellow No. 27

Deniz graduated magna cum laude from Cornell University in 2023 with a B.S. in bioengineering. As a researcher in the Barstow Lab, she conducted research on bioelectrochemical systems for biofuel production using electroactive microbes with support from three Cornell Engineering research grants. She has worked at Lanza-Tech (2022) and the Joint BioEnergy Institute (2024) studying gas fermentation for sustainable biofuel production. She will pursue a bioengineering Ph.D. at Stanford Univ. to explore her academic interests in synthetic biology, sustainability, cell-free systems, protein engineering, and carbon-negative biomanufacturing. She is also dedicated to STEM outreach initiatives and science communication. She led the Cornell iGEM synthetic biology project team, worked with schools across North America to initiate similar research teams, and led a Global BioArt Competition in 2023. In the future, she strives to become a principal investigator working on cutting-edge synthetic biology tools to promote planet health while leading the next generation of aspiring scientists.



Sayre P. Satterwhite

Anderson Fellow No. 24

Sayre graduated from the University of Iowa in 2024 with a B.S.E. in mechanical eng'g, a certificate in artificial intelligence, machine learning & simulation, and an economics minor. He engaged in environmental fluid mechanics research under Corey Markfort, investigating the role of the atmospheric boundary layer on the development of oceanic waves. This helped him become the first NOAA Hollings Scholar from the Univ. of Iowa, where his research created algorithms to measure directional wave spectra using autonomous sailing drones. He completed four internships, at Tenneco in both the U.S. and Germany, Siemens, and Saildrone, Inc. Sayre will begin his graduate studies this fall at the Univ. of Michigan in naval architecture and marine eng'g under Professor Anchal Sareen, investigating novel marine renewable energy harvesting methods. Following his studies, he aims to use his research to expand economically and socially feasible renewable energy sources available on The Great Lakes. Sayre enjoys fiddling and designing/welding custom bicycle frames.



Andrew "Andie" R. Tubbs

Tau Beta Pi Fellow No. 845

Andie graduated summa cum laude with a B.S. in biomedical engineering and a minor in entrepreneurship from the University of Memphis, where he is now pursuing a Ph.D. in the same field. He served as TN Epsilon Chapter president and continues to engage as an alumni advisor. Initially drawn to astronautical eng'g with aspirations of becoming an astronaut, Andie shifted to biomedical eng'g after being diagnosed with Hypermobile Ehlers-Danlos Syndrome (hEDS)—a connective tissue disorder characterized by joint instability, chronic pain, and various comorbidities. Driven by a personal mission to develop an effective treatment for hEDS to help his sister, mother, himself, and millions worldwide, his research focuses on the role of MMP inhibitors in preventing the degeneration of extracellular matrices. Andie then plans to transition into bioastronautics, addressing joint and connective tissue degeneration in astronauts, and continue his journey to the stars. He ultimately aims to advance human space exploration, enhance understanding of the universe, and foster multi-planetary habitation.



Zoe L. Vittum

Tau Beta Pi Fellow No. 846

Zoe graduated from the University of Maine in 2023 as the salutatorian of her class, receiving a degree in biomedical engineering with minors in bioinstrumentation and neuro-science. Her interest in mechanobiology and ex-vivo modeling of biological systems led her to pursue her Ph.D. in biomedical eng'g with Prof. Mensah's lab. Zoe now researches mechano-sensitive proteins of the basal glycocalyx in vascular endothelial cells and their roles in transducing physiological stimuli and maintaining vascular health. Outside of her studies, Zoe is a member of the Biomedical Engineering Society and Society of Women Engineers.



Yancey D. Williams II

Tau Beta Pi Fellow No. 847

Yancey graduated from the University of Alabama at Birmingham (UAB) in 2023 with a B.S. in biomedical engineering. He served as president, and in other officer positions, for the AL Gamma Chapter, aiming to increase membership and retention through social awareness and community service. At UAB, Yancey was involved in various organizations, from vice president of the Biomedical Engineering Society to being a mentor in the Blazer Male Excellence Network. He has been recognized as a Minority White Coat Foundation Healthcare Scholar, Yale BioMed/Amgen Scholar, and UAB's 2023 Undergraduate Student President's Diversity Champion. He's now at Yale University, conducting research at the Cardiovascular Research Center. His research focuses on cardiac electrophysiology, specifically the metabolic signaling of AMP-activated protein kinase in ventricular arrhythmogenesis. Yancey will be pursuing a Ph.D. in biomedical eng'g to enter the field of regenerative medicine and develop novel yet low-cost biomedical devices.



Jacqueline "Jackie" Yang

Forge Fellow No. 12

Jackie is a graduating senior and Egleston Scholar at Columbia University studying electrical engineering. At Columbia, she has worked in the Lightwave Research Lab under Prof. Keren Bergman, developing a computationally efficient, dynamically-updating optical device simulator, and with Prof. John Wright on attention mechanisms in vision transformers. Her work has been supported by the Doris Duke Foundation, the Semiconductor Research Corp., and the Optica Foundation. Jackie is a TBPI Scholar and served as NY Alpha Chapter president. She's also been a teaching assistant for classes including Electronic Circuits, Signals & Systems, Computer Systems, and Multi-variable Calculus, and spent a summer teaching robotics to NYC high school students through the Education Experience for Undergraduates Program. In her free time, she enjoys running with the Columbia distance team, practicing cello, and playing chamber music. After graduation, she plans to pursue a Ph.D. in electrical eng'g at Stanford Univ. as a NSF Graduate Research Fellow.



Chujun "Julia" Zhao

Tau Beta Pi Fellow No. 848

Julia graduated as salutatorian of Columbia Univ. Engineering in 2023, having studied biomedical engineering and computer science. She is currently a Rhodes Scholar at the University of Oxford reading for a master's in statistics, after which she will start her Ph.D. at the Harvard-MIT Health Sciences and Technology program. Her research has spanned immunology and oncology, while her undergraduate work focused on leveraging machine learning to study mechanisms of cancer evolution for pancreatic cancer, one of the deadliest diseases. Her work has been published in *Science* and other journals, which also won her a Goldwater Scholarship in 2022. While at Columbia, she served as NY Alpha Chapter vice president, attended the TBII annual Convention, and led new activity programs on campus. Julia was also actively involved with the Systems Biology Initiative, Orchesis Dance Group, and volunteering. She hopes to pursue a career in academia with the goal of understanding complex human diseases and engineering novel therapeutics to treat them.



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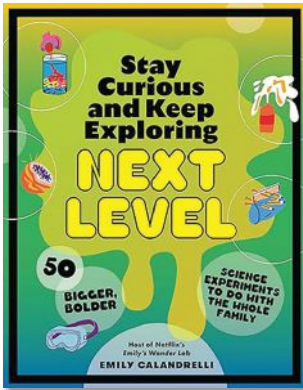
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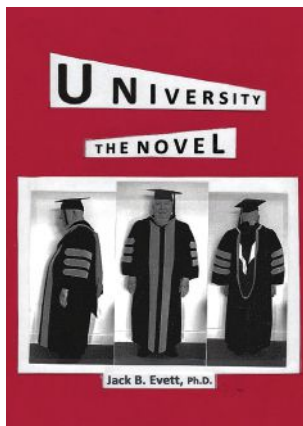
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Authors

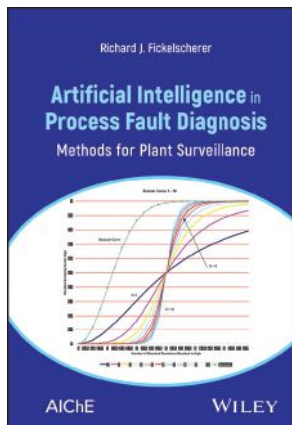
Recently published a book? If so, we would like to recognize you! Send details and a cover image to d.lane@tbp.org.
 Note: Due to the popularity of this section, submissions are first come, first served, as room allows. Thanks!



Emily D. Calandrelli
West Virginia Alpha '10
Stay Curious and Keep Exploring: Next Level: 50 Bigger, Bolder Science Experiments to Do with the Whole Family
 The bestselling, science experiment series is back. Host of Emily's Wonder Lab on Netflix and FOX's Xploration Outer Space, she is taking curiosity to the next level with new experiments that sparkle and explode. Her M.S. in aero/astro engineering is from MIT.

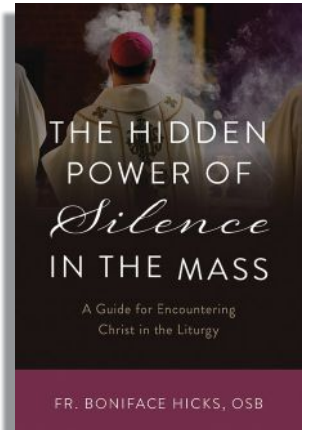


Jack B. Evett, Ph.D., P.E.
South Carolina Beta '64
University: The Novel
 Jack's first attempt at a novel is set around a fictional university in South Carolina and comprises a number of subplots that are woven throughout the book. The novel is intended to be entertaining and at times humorous while also giving insights as to what might go on around a university. Jack is a retired engineering professor from the University of North Carolina at Charlotte.

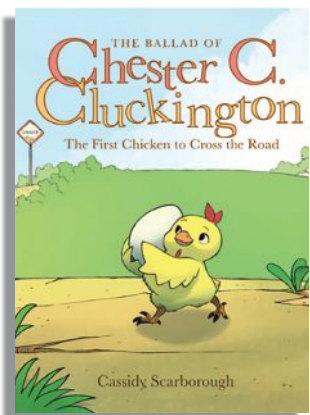


Richard J. Fickelscherer, Ph.D., P.E.
New York Nu '83
Artificial Intelligence in Process Fault Diagnosis: Methods for Plant Surveillance
 A retired chemical engineer whose career centered on creating and implementing advanced process control software. Richard explores the application of artificial intelligence programming techniques to an assortment of possible process fault diagnostic strategies. The book attempts to keep pace with the rapidly evolving field of real-world AI applications.

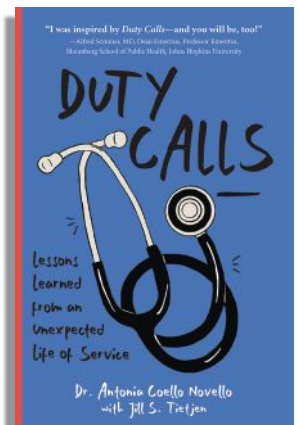
Rev. Boniface (Patrick) Hicks, Ph.D., O.S.B.
Pennsylvania Beta '97
The Hidden Power of Silence in the Mass: A guide for Encountering Christ in the Liturgy
 This is the fifth book authored by Father Boniface, a monk of St. Vincent Archabbey (PA) where he's celebrating 25 years of monastic vows and 20 years as a priest. His latest offering explores the various textures of silence in general, the ways in which silence affects your interior life, and how silence can draw you into more intimate prayer. Fr. Boniface has three computer science degrees.



Cassidy A. Scarborough, EI
South Carolina Alpha '16
The Ballad of Chester C. Cluckington: The First Chicken to Cross the Road
 While it is common for people to ask "Why did the chicken cross the road?", this children's book explores a different question — "Why did chickens start crossing the road?" Join Chester on his adventure as he sparks a trend of jaywalking fowl wherever farms are found. Cassidy is a USAF infrastructure engineer with biosystems eng'g B.S. and M.S. degrees from Clemson University.



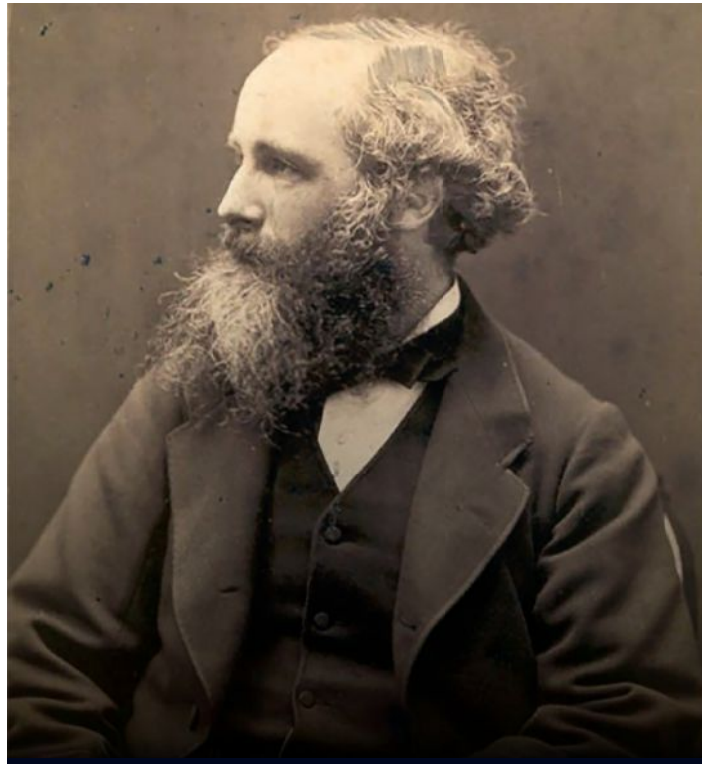
Jill S. Tietjen, P.E.
Virginia Alpha '76
Duty Calls: Lessons Learned from an Unexpected Life of Service
 Jill's latest book is a memoir of the first female and first Hispanic U.S. Surgeon General. Dr. Antonia Novello recounts her childhood illness and her life of service as well as lessons learned — as U.S. Surgeon General, as Commissioner of the Department of Health for the State of New York during 9/11, and through hurricanes, earthquakes, and the pandemic in her native Puerto Rico.



THIS IS THE FIFTEENTH IN A SERIES OF ARTICLES THAT INVESTIGATES THE HISTORY OF SCIENCE AND ENGINEERING.

One way in which this history has been preserved is in the names of the scientific units that we commonly use. Those units will serve as starting points for these articles as we explore "Why do we call it a...?"

By: **Lyle D. Feisel**, Ph.D., P.E. (ret.),
Iowa Alpha '61



WHY DO WE CALL IT A...

MAXWELL

When I was a sophomore in college, we spent some time learning to do conversions among the several systems of units. Of special interest was conversion between the centimeter/gram/second (CGS) and the meter/kilogram/second (MKS) systems. A couple of years later (1960), the General Conference on Weights and Measures established the International System of Units (SI) which incorporated the MKS system. As SI was increasingly adopted, the CGS system started to fade from the scene. Wikipedia informs us that CGS is still used in such fields as theoretical physics and astronomy, but I believe that most fields of engineering and science use SI exclusively. That is unfortunate in one sense because the names of some of our most renowned

scientists are preserved in the units of the CGS system. Such as the maxwell (abbreviation Mx); that is the CGS unit of magnetic flux, named for James Clerk Maxwell, a brilliant Scottish physicist. You will see Maxwell referred to as "Maxwell" or "James Clerk Maxwell" or "Clerk Maxwell," but rarely, if ever, as "James Maxwell." That's because the family name is, arguably, "Clerk Maxwell." Maxwell's father was born "John Clerk" and added the name "Maxwell" when he inherited the family estate from his grandmother, Dorothea Clerk-Maxwell. There is a Clerk Maxwell Road on the Cambridge campus.

But enough trivia. Let's talk about the man. James Clerk Maxwell was born on June, 13, 1831, in Edinburgh, Scotland.

This was the same year that Michael Faraday discovered electromagnetic induction, a phenomenon that Maxwell would later codify in his eponymous equations. His father was an advocate (lawyer) with inherited wealth in addition to a good income. Even as a small child, Maxwell was recognized as having an insatiable curiosity and an exceptional intelligence. He was initially educated at home, first by his mother and then by a young tutor. The tutor experience was apparently far less than ideal so, at the age of ten, Maxwell was enrolled in the Edinburgh Academy, a preparatory school that still exists today.

During his first year at the academy, Maxwell did not fit in with boys who had been raised in more social

circumstances. As he matured, however, he acquired friends and adapted to the life of a student. Academically, he did not excel at first but soon started to stand out as he won prizes in mathematics as well as in poetry and English. At the age of fourteen, he published his first scientific paper on the properties of ellipses. Since he was considered too young to present the paper, it was read before the Royal Society of Edinburgh by a professor from the university. In 1847, when Maxwell was 16, he left the academy and enrolled in Edinburgh University. His formal studies didn't require all his attention, so he had free time to pursue independent studies and conduct scientific experiments. He also found time to write two more papers, one dealing with the refraction of light in liquids and another following up on his work on ellipses. Again, it was determined that he was too young to present the latter paper and it was read to the Royal Society of Edinburgh by one of his teachers.

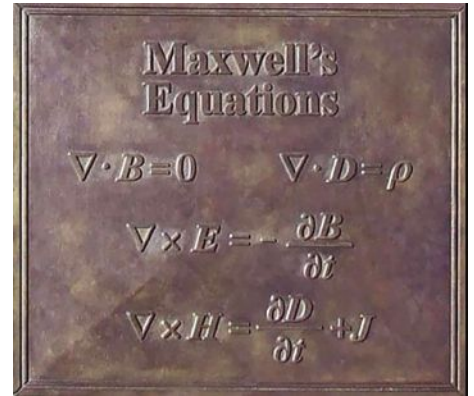
In 1850, at the age of 19, Maxwell transferred to Trinity College at the University of Cambridge in England. There, he continued to excel, graduating in 1854 with a degree in mathematics. He was appointed a fellow of Trinity College the next year but was lured back to Scotland when he was appointed Chair of Natural Philosophy at Marischal College in Aberdeen. In 1860, Marischal merged with King's College of Aberdeen to become the University of Aberdeen. The new university didn't need two chairs of Natural Philosophy, so Maxwell found himself out of a job. He then applied for and was appointed to the Chair of Natural Philosophy at King's College of London. In 1865, he left King's College and took a six-year sabbatical, living at the family estate but continuing his theoretical and experimental work. In 1871, he was appointed Cavendish

Professor of Physics at Cambridge where he remained for the rest of his life.

Maxwell made many scientific contributions during his career but probably the most far reaching was his book, "A Dynamical Theory of the Electromagnetic Field," published in 1865. (To put that in time perspective, the reader will recall that 1865 is the year the American Civil War ended.) In the book, Maxwell explored the interaction between electric and magnet fields and showed that if they varied in time, they would travel through space at the speed of light. He also predicted that they should be detectable at a distance. Some twenty years later, after Maxwell's death, Heinrich Herz demonstrated that this was indeed the case. A few years after that, Guglielmo Marconi developed practical systems of wireless telegraphy based on Maxwell's theory. In the book, Maxwell also suggested that light is a form of electromagnetic radiation.

In addition to his seminal work in electromagnetic radiation, Maxwell made contributions in several other scientific fields. He explored the viscosity of gases and the phenomenon of color vision. He also did theoretical work on the velocity of molecules in gases resulting in the development of the Maxwell-Boltzmann distribution which provided a statistical description of those velocities. Venturing into engineering, Maxwell analyzed the governors used to control the speed of steam engines. His methods of analysis, which involved the management of feedback, established the basis of the field of control theory.

While Maxwell is generally considered to be one of the three greatest scientists of all time (along with Newton and Einstein), he also had talents and interests outside of science. He sang and played the guitar and was a prolific poet with many poems reflecting a droll sense



Maxwell's equations on a plaque mounted on his statue in Edinburgh.

of humor. He won a prize for poetry when he was in high school, and a book of his poems was published after his death. Perhaps his best-known poem is "Rigid Body Sings," an adaptation of Robert Burns' "Coming thro' the Rye." It begins,

*Gin a body meet a body
Flyin' through the air.
Gin a body hit a body,
Will it fly? And where?*

It is Maxwell's poetic invitation to apply the laws of conservation of energy and momentum.

Maxwell died on 5 November 1879 at the age of 48. One can only wonder what he might have accomplished had he lived another twenty years. He is buried in the Galloway region of Scotland where he grew up. While he was happily married for many years, he and his wife Katherine had no children. His legacy, in addition to his poetry, consists of his extensive work in various branches of science and engineering. His greatest contribution is the unification of electromagnetic fields in Maxwell's equations and his prediction of electromagnetic radiation. And that's why we call a maxwell a maxwell.

BRAIN TICKLERS



Results From Winter

Perfect Scores

Bohdan, Timothy E.	IN	Γ	'85
Colello, Marc C.	NY	I	'97
*Couillard, J. Gregory	IL	A	'89
Gibbs, Kenneth P.	MO	Γ	'76
Hefter, David	CA	M	'23
*Mayer, Michael A.	IL	A	'89
Merkle, Laurence D.	OH	H	'92
*Norris, Thomas G.	OK	A	'56
Norris Jr., Thomas G.	PA	Γ	'79
Parks, Christopher J.	NY	Γ	'82
Roediger, Robert R.	MO	Γ	'71
*Snyder, Thomas M.	GA	A	'70
*Tang, Angela L.	NY	Δ	'18
*Upshur, John I.	VA	A	'83

Other

Bannister, Kenneth A.	PA	B	'82
Bernacki, Stephen E.	MA	A	'70
Bertrand, Richard M.	WI	B	'73
Bhatia, Sunita K.	DE	A	'92
*Braña-Mulero, Francisco	PR	A	'74
Budd, Christopher M.	AZ	B	'94
Doo, Yi-Hsien	MI	Z	'81
Edel, Kentworth M.	AZ	A	'83
Golemme, Steven S.	IL	A	'20
Goodrich, Robert W.	CA	B	'81
Grewal, Kalwant S.	TX	H	'73
Grewal, Rashi	NJ	Γ	'09
*Griggs Jr., James L.	OH	A	'56
*Harvey, Arthur J.	OH	A	'83
Haynes, Donald C.	TX	Z	'71
Heutchy, David A.	PA	Γ	'69
Holcomb, J. Eric	OH	A	'82
*Kimsey, David B.	AL	A	'71
Kovalick, Albert W.	CA	H	'72
*Kuhn, Walter A.	OH	A	'81
Lalinsky, Mark A.	MI	Γ	'77
Manning, Robert J.	MA	A	'88
McHenry, S. Dale	MO	B	'81
McNulty, Whitney P.	LA	A	'85
Mitchell, Mike K.	AZ	A	'75
Partanen, Thomas A.	MI	B	'70
Reza, Alisya	Non-member		
Riedesel, Jeremy M.	OH	B	'96
Rowe, Steven A.	ME	A	'81
*Schleehauf, Martin W.	NY	N	'79
Schwam, Susan E.	WA	A	'88
Schwam, Freely	Spouse of member		
Sherd, Kevin M.	OH	N	'96
Silver, Robert E.	NY	P	'80
Siegel, Timothy J.	PA	A	'80
Spring, Gary S.	MA	Z	'82
Spring, Mitchell G.	Son of member		
Srebnick, David L.	CT	B	'78
Strong, Michael D.	PA	A	'84
Summerfield, Steven L.	MO	Γ	'85
Tellechea, Gabriel	TX	A	'87
*Thaller, David B.	MA	B	'93
Tso, Robert	CA	E	'80
Wetterlind, Drew	Son of member		
Wetterlind, Eric J.	MN	B	'93
Zison, Stanley W.	CA	Θ	'83

*Denotes correct bonus solution

Winter Review

The Bonus (coffee cup) problem had just under 60 percent correct answers. The tic-tac-toe problem turned out to be the hardest regular one, with just over 60 percent of submitted answers being correct.

The dice problem was the next hardest regular problem with just over 75 percent of submitted answers being correct (Many submissions did not follow our requested format, but as long as opposite faces were the correct pairs, we counted it correct).

Only the ship order problem had 100 percent correct submissions.

Spring Answers

1: The overall probability that the field goal will be good is 66.1 percent. Constructing the problem shows that the horizontal angle to the corner of the goal post is 3.5288 degrees from a straight kick, or 1.4115 standard deviations away from the mean of 0. Therefore, the probability that the aim is good is 84.19%. The speed and launch angle are intertwined. If the angle is fixed, a minimum speed can be calculated from the equations of projectile motion. If the speed is fixed, then a "window" of angles can be calculated. Using the first method, the probability of hitting a particular angle within a small window can be calculated, and then multiplied by the probability of achieving the minimum speed for that angle. Do this for all angles from 15° to 80° and sum all the probabilities to find that the probability that the speed and launch angle will be good is approximately 78.55%. This can also be determined through computer simulation.

$$P_{\text{kick is good}} = P_{\text{aim is good}} \times P_{\text{speed/angle is good}}$$

$$66.1\% = 84.19\% \times 78.55\%$$

2: $X = 3A + 2B$ If the rollers did not move, one can see that the distance from one end of the bar to the other would be $2A + B$ after the movement. The rollers move along the ground through the same length that the bar moves along the rollers. The bar is in contact with the roller for the distance $A + B$, so that is the horizontal distance that the rollers move. The diameter of the rollers does not matter. Total = $(2A + B) + (A + B)$

3: If y is restricted to integers (what we implied), the answer is:

$$y = 63 \text{ with WRONG}=13269$$

$$\text{ARIGHT}=835947$$

If y is allowed to be any real number (what some users did), the answer is:

$$y = 88.7726 \text{ with WRONG}=10237$$

$$\text{ARIGHT}=908765$$

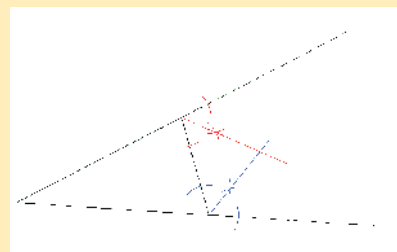
We scored either answer as correct.

4: There can be 12 citizens.

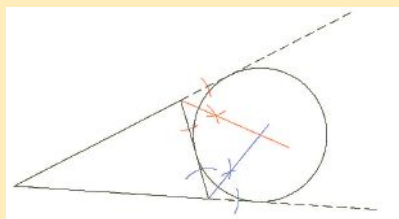
The number of white rose bushes planted is X . The number of red rose bushes planted is X^2 . The number of yellow rose bushes planted is X^4 . The number of surviving yellow rose bushes is $X^4 - X^2$. It can be found that for $X = 2$ that $X^4 - X^2 = 12$. For all higher values of X , $X^4 - X^2$ is always divisible by 12.

5: Geometric Construction

The first step is to construct each angle bisector between the side of the triangle and the two extended sides, as shown:



5 (continued): The center of the tangent circle is at the intersection of the angle bisectors, so step 2 is to simply use the compass to draw the tangent circle:



It should be noted that the angle bisector of the opposite corner of the triangle also intersects the center of the circle. Constructing any two of the three angle bisectors would suffice to construct the circle.

BONUS:

In Scenario (i), the student with the 1st place score in all three subjects must have a combined **ranking of 1st place**.

In Scenario (ii), if a student is first in Math and English and also 1st combined, then **their rank for English can be anything from 1st to 23rd place**. This is possible if the scores for Math and French are much higher (more heavily weighted) than the scores for English.

In Scenario (iii), for a student who is 2nd in Math, 5th in English, and 6th in French, it can be shown that the combined **rank can be as high as 1st and as low as 11th**. To show 1st place, one only need to show a hypothetical arrangement such that they have the highest combined score:

Math Rank - Score	English Rank - Score	French Rank - Score	Com-bined Score	Com-bined Rank
2 - 99	5 - 96	6 - 95	290	1
1 - 100	1 - 100	23 - 78	278	2
3 - 98	2 - 99	22 - 79	276	3
4 - 97	3 - 98	21 - 80	275	4
5 - 96	4 - 97	20 - 81	274	5
6 - 95	6 - 95	19 - 82	272	6
7 - 94	7 - 94	18 - 83	271	7
8 - 93	8 - 93	17 - 84	270	8
...
23 - 78	23 - 78	1 - 100	256	23

To show 11th place, one can show a hypothetical arrangement such as 10 students are ahead of them:

Math Rank - Score	English Rank - Score	French Rank - Score	Com-bined Score	Com-bined Rank
7 - 245	7 - 98	1 - 300	643	1.5
8 - 244	1 - 300	7 - 99	643	1.5
3 - 249	2 - 290	9 - 97	636	3
6 - 246	6 - 99	2 - 290	635	4
4 - 248	3 - 280	10 - 96	624	5
11 - 241	11 - 94	3 - 280	615	6
5 - 247	4 - 270	11 - 95	612	7
10 - 242	10 - 95	4 - 270	607	8
9 - 243	9 - 96	5 - 260	599	9
1 - 300	8 - 97	8 - 98	495	10
2 - 250	5 - 100	6 - 100	450	11
12 - 240	12 - 93	12 - 94	427	12

The students with higher ranks in the individual subjects are highlighted, and it can be seen that they occupy one position in each row. One student ranks higher in Math, 4 students rank higher in English, and 5 students rank higher in French. Altogether, 10 students rank higher than the student in question.

In Scenario (iv), similarly it can be shown that the student could have a combined **rank as high as 15th and as low as 23rd**.

Lastly, in Scenario (v), the student who is 17th in Math and 19th in English can be ranked 1st combined if they are **as high as 1st and as low as 11th in French**. To illustrate the 11th place position, it can be seen that 6 students are behind them in Math, 4 students are behind them in English, and 12 students are behind them in French. Overall, that is 22 students behind them, which puts them in the combined 1st place position.

COMPUTER BONUS:

The smallest prime p is 1093.

1093^2 divides $2^n - 1$ when $n = 364, 728, 1092, \dots, (364 + 364k)$

1093 is a Wieferich prime. The only known Wieferich primes are 1093 and 3511. The number of Wieferich primes is believed to be infinite, but

to date no other Wieferich prime below 4.97×10^{17} has been found.

New Summer Problems

1: Cryptic Arithmetic

In the following, the same letter always has the same base-10 value, but that value may not be unique and may be zero, negative, or fractional. $O+N+E=1$; $T+W+O=2$; $T+H+R+E+E=3$; $F+O+U+R=4$; $F+I+V+E=5$; $S+I+X=6$; $S+E+V+E+N=7$; $E+I+G+H+T=8$; $N+I+N+E=9$; $T+E+N=10$; $E+L+E+V+E+N=11$; $T+W+E+L+V+E=12$; $T+H+I+R+T+E+E+N=13$; and $F+O+U+R+T+E+E+N=14$. What is the value of $(A+F+F+I+X+I+N+G) - (A+N+S+W+E+R)$?

—An Enigma by Susan Denham in *New Scientist*

2: Random Queens

Two queens are placed at random (but not in the same square) on a chessboard. What is the exact probability that they do not attack each other?

—Across the Board: The Mathematics of Chessboard Problems by John J. Watkins

3: Bad Clocks

Unfortunately, Mr. Roger's 12-hour analog clock (with continuously moving hands) has a defect: the minute and hour hands are indistinguishable. He worries that some configurations of the hands are ambiguous, that is, they could represent two different times. How many ambiguous configurations are there in a 12 hour period?

—Puzzle Corner by Allan Gottlieb in *Technology Review*

4: Colorful People

Palm Island has three types of citizens: the Greens who always tell the truth, the Reds who always lie, and the Grays who alternately tell the truth and lie. Citizens know

BTs continue on page 49.

Alumni Giving

Donor Recognition Clubs

The Donor Recognition Clubs are part of our effort to recognize a donor's total lifetime cumulative giving to Tau Beta Pi. **THANK YOU** to the 2,826 TAU BETA PI ALUMNI and others who made donations to the Association totaling \$952,148 between February 1, 2024, and April 30, 2024. The names of donors whose gifts were received after April 30 do not appear here but will be published in the Fall 2024 issue. These club names and amounts, established by the TBII Executive Council, are set at the following levels:

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Edward H. Williams Jr., Sc.D.
PA A 1875, Founder of Tau Beta Pi

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Marjorie A.H. Franklin, KS A 1957
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2nd Sec.-Treasurer of TBII

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Inventor of graphic calculator

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Led TBII/Sigma Tau merger

NOTES:

1. Names preceded by SPEC denote gifts from non-members.
2. Names marked with a † symbol are of deceased members in whose memory donations were made either by relatives and friends or through bequests.



Ken M. Elovitz, P.E., J.D.
PA A '75

It is my honor to help TBI reward hard work and accomplishment.



Clarke Club
Steven F. Stanley, Ph.D.
MN A '84

It's a privilege to support the next generation of engineers to prepare them to lead the way forward.

Moore, Forman & Pre-Club Members Listed on website

Due to the number of alumni contributors, the Moore, Forman, and Pre-Club Members will be acknowledged on our website at: www.tbp.org/?AGP. All donations are essential to the continued success of the Association, but as print costs rise with

each issue, these donors will be listed with all of the other contributors in a protected PDF document. If you have questions or concerns, please contact tbp.development@tbp.org. Thank you for your understanding as we strive to produce an enjoyable and cost effective magazine for our readers.

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No alumni gifts for this quarter

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CA Y Alexander, Joseph William '06
Alexander, Rachel Kristin '15
Idenmill, Ethan Matthew '04
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Uhler, Robert Bruce '74
FL B Robert, Raymond W. '66
IN A Ricks, Steve Wayne '63
IA A Burmeister, Jon Barth '68
Peterson, Mike Laurel '89
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MI Γ Tielking, Tom '62
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NY B Fleisher, Richard Stephen '72
NY E Maniscalco, Thomas Louis '67
NY E Denning, Peter James '64
OH A Rasbold, Chuck Charles '83
PA B Klingensmith, Rick Lee '82
Reese, J. Mark '80
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PA H Hettche, Ray Raymond '61
PR A Garcia, Carlos E. '77
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MO Γ Taber, Norma J. '80
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NJ A Skowronski, Victor J. '71
NJ B Dougherty, Steven Patrick '64
NJ Γ Raia, Lawrence A. '65
NM A Smith, Jeffrey A. '84
NM B Menako, Jack Allen '84
NY A Elwell, Bill Edward '78
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NY Δ Altschuler, Stan Jon '63
 Nelson, Arnold Stanley '50
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 Butterman, Heidi Carol '79
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NY K Muller-Girard, Otto Theodore '52
NY N Sherman, Lawrence Joseph '74
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NY T Olenik, Anthony Michael '08
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 Markuson, Donald Miner '80
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OH M Hansen, Steven William '69
OR A Brunner, Thomas Morris '63
PA A Scott, Walter Alfred '59
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 Trundle, Max Don '72
 Wilson, Wayne '77
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 Stewart, John Dale '78
TX A Campbell, Robert Fariss '73
 Dorr, Larry Daniel '68
 Smith, Matt Thomas '93
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TX Δ Cloud, Eugene Harrington '67
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CA Γ Reneau, Leon R. '58
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 Dobbs, Michael Wayne '66
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CA P Andersen, Eric Kenneth '79
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 Rense, John A. L. '74
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CO Γ Mead, Dick Wilson '63
 Pearson, Larry '64
 Ton, Scott Marshall '74
CT A Livingston, Robert McLean '57
CT B Devin, Maurice Roger '73
 Leib, David Bernard '61
 Pitkin, Edward Thaddeus '52
DE A Remondi, Benjamin William '67
DC Γ Altamore, Annette '79
 Keltie, Robert Joseph '69
FL A Iwens, Ralph Peter '62
 Lewis, Lee Conley '91
FL Γ Passman, Alan Joseph '06
 Dip, Anthony '86
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FL Δ Nugent, Jim Charles '95
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 Waranauskas, Amy Louise '85
IL B Anderson, Robert Francis '62
 Carter, David William '68
 Forish Jr., George Edward '75
IL Γ Dixon, David Allen '63
 Gajda, Gregory Joseph '80
 Schwartzbard, David Leigh '91
 Wilsak, Richard Allen '78
IL E Williams, Michael Joe '95
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IN A Hall, Thomas Wayne '67
 Hohn, Richard Edward '62
 Lupfer, Thomas Harrison '79

Novy, Robert A. '85
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 Sommer, Dianna Marie '83
 Suzuki, Wayne Takashi '67
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 Yoder, Norman Everett '71
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 Zuppic, Tony Mario '70
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 Luecke, Edgar Jacob '55
IA A Cortum, John David '77
 Pedersen, Robert Dennis '62
 Puffett, George E. '83
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IA B Schmidt, Chuck Chris '73
KS A Moore, Richard Arthur '51
KY A Anderson, Lee Roy '71
 Davis Jr., Lewis Berkley '66
 Halloran, Stephen Richard '75
 Howe, Richard Samuel '59
LA A Larose, David Edward '73
 Nelson Jr., George Gus '52
 Smith, Stewart Van '73
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 Lejeune, James Joseph '73
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 Jeffs, Alan Robert '73
MD A Guzy, Jeffrey David '83
 Tate, David Marshall '84
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 Booth, Andrew William '64
 De Oms, James Howard '68
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 Burgarella, John Paul '50
 Descoteaux, Kenneth Gerard '89
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 Lescoe, James Terrence '05
 Chang, Nancy Tien-Tien '87
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 Mandell, Gordon Keith '69
 Patterson, John Bryan '68
 Simpson, Richard Allan '67
MA Δ Smeglin, Anthony Michael '76
 Stark, Lucius Dickinson '64
MA E Bittner, Douglas E. '83
 Brunetto, Tom P. '74
 Linscott, Anne Wiklord '80
MA Z Brindis, Samuel B. '80
 Lastella, Michael James '72
MA H Penafiel, Jay Buhay '90
MI A Chamberlain, Adrian Ray '51
MI B Lindgren, Douglas LeRoy '69
 Pearson, Walter Claydon '62
 Saccany, Richard Joseph '71
 Vojtech, Larry Joseph '69
 Vukovich, Robert James '83
MI Γ Ardis, Robert Boyd '46
 Davies, John Richard '50
 Gromer, John David '74
 Grossman, Michael Alan '88
 Kasper, Alan R. '62
 Pendleton III, Win Kent '62
 Smithies, Henry '49
 Stewart, Steve Russell '66
 Wackenhut, Thomas Carol '69
 Washburn, John Robert '69
MI Δ Kogut, Ken Joseph '71
MI E Chudd, Richard Alan '66
 Szafranski, Joseph Paul '66
 Thompson, George W. '55
MI Z Pettiford, Steven Douglas '72



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Paul M. Adamo
 TX A '85

Funds donated support financial needs of next generation engineers and I'm proud to help these efforts.



Clarke Club
Benjamin C. Berk
 VA B '72

Supporting TBI is one of the best ways to assure the future.

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Goodwin, Robert Wayne '62
McDonald, Dan William '82
Van Essen, John Scott '74
- MS A** Black, Howard Wayne '95
Coley, James William '61
McKay Jr., Frank Fay '60
- MS B** Woody, Marvin David '79
- MO A** Sandfort, Robert Melvin '64
- MO B** Mahin, Clif Alan '76
Miller, Michael John '74
Voss, Thomas Robert '69
- MO Γ** Galambos, Theodore Victor '53
- MT A** Brown, Lloyd Robert '72
Pearce, Mary Ann '76
Whitcomb, David L. '64
- NE A** Doerr, Eric Arthur '88
Plummer, Scott Royce '81
Schmidt, Wayne William '70
Steube, Milan Ray '74
- NJ B** Carey, Mark '77
Rice, Darren Christopher '91
Rodgers, Douglas Noss '67
Sharkey, John Michael '84
- NJ Γ** Angyal, Stephen '63
Castaldi, Frank James '69
Dooley, Ronald M. '64
Mauermeyer, Henry A. '72
Pecca Jr., John Anthony '87
Riede, Bruce Erwin '67
Sharon, Tony Peter '74
- NJ Δ** Coco, Elizabeth Halliday '87
Meyer, John Edward '81
- NM B** Andrews, Mark Jay '91
- NY A** Kofman, Boris B. '86
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Ordway III, Fred Delancy '69
Smith III, George Earl '80
Vilardi, Gregory Henry '90
- NY Δ** Klepeis, John Emrich '85
Livingston, Laura Jane '73
Zises, Matt Scott '96
- NY E** Febesh, Melvin '47
Grace, John Thomas '55
- NY Z** Frohman, John E. '72
Zieve, Robert M. '55
- NY H** Arminski, Leslie M. '75
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Stoll, Eric Duane '61
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- NY Λ** Petsche, Frank '78
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- NC Δ** Jones, Luellen Barnett '83
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Hamilton, Joshua J. '09
Ockunzzi, Kelly Anne '94
- OH B** Burger III, George Dean '68
Dutko, Robert James '90
- OH Γ** Bouman, Robert William '60
Robinette Jr., William Henry '68
- OH Δ** Miller, Truesdell Charles '64
Wuerdeman, Robert C. '69
- OH Z** Armstrong, Chris Kent '00
Armstrong, Ellie Rebecca '01
Babula, Maria '89
- OH H** Novak, Eugene Clark '59
Pyers, Dean Hale '84
Gressang, Randall Vernon '72
Kelso, TS '88
Leifeste, Sam Ernest '63
Schmoll, Joseph Herman '81
- OH Λ** Chegar, John Thomas '90
Rohr, Timothy Paul '80
- OH M** Kovacs II, William '74
- OK A** Hysinger, T. '63
Markland, Ralph John '88
Wustenberg, John Walter '84
Bobo, James Edward '77
- OK B** Arsenault, Paula Marie '81
- OR A** Milton, Stuart W. '84
Paynter III, W. Burton '74
- PA A** Leitch, Donald George '56
Lynch, Sarah Hayward '89
- PA B** Cirotta, Marcie Dale '95
Hummel, John Richard '73
Kotivosky Jr., John Edward '92
Laverty, Bruce Andrew '82
Shaffer, David Bruce '68
Wisman, Craig Burton '75
- PA Γ** Flickinger, Richard Frederick '62
Kulicki, John Milton '65
- PA Z** Talecki, Stephen A. '76
- PA Θ** Kneidinger, Carl Frederick '70
Meyer, James Leo '68
Threston, Joseph Thomas '57
Janocko, David Jeffrey '81
Reedy, Herman E. '75
- PA Λ** Irizarry, Arcelio '86
- PR A** Ramirez, Miguel Angel '73
- RI A** Nielsen Jr., Carl Ernest '56
- SC A** Di Lapi, Christine Marie '87
Doss, Thomas Glenn '71
Drennan Jr., Bob Francis '70
Jones, Walter Fleming '78
- SD A** Johnson, Jerry Allen '92
- TN A** Armentrout, Daryl Ralph '65
Baker, Jon Pankey '74
Cook Jr., Joseph Campbell '65
Hueser, David Lee '76
King, Gregory T. '93
Jennings-King, Sherry Denise '93
Pentecost, Gene Edgar '50
- TN B** Denny, Hugh Wayne '60
- TN Γ** McDonald, Gary Haywood '77
- TX A** Abad-Fitts, Carmen Beatrice '80
Haley, Dennis Clyde '70
Herring, David M. '55
Peterson, Robert Adrian '80
Stanley, William Robert '94
Berthold, Kris David '04
Boyd, Suzanna Ruth '81
Carey, Martha Derden '80
Eakens, Robert William '72
Gilmer, Tracy F. '80
Hoiberg, John Arnold '64
MacCallum, Gregory James '81
Newkirk, Todd Leland '87
Soules, James Gregory '79
Stinson, John Michael '66
David, Anne Marie '87
Dobbins, James Roy '74
Lodal, Jan Martin '65
Pieper, Wylie Bernard '53
Barger, David Carl '71
Clinton Jr., Daniel Darius '52
Muldrow, Grady Montgomery '89
Brown, Ian William '73
Falk, Nathan Max '75
Godwin, Albert Eugene '84
Hoffman, Heather Brunn '92
- TX B** Havo, Karen Patricia '86
Lyman, George Randall '79
Creslein III, William Edward '52
Pearson, Glen Hamilton '71
Shearer, Richard Lee '70
Abbott, Terence Scott '75
Labelle Jr., William M. '89
- TX Θ** Hulsizer, Stephen Anthony '69
- UT A** McDonald, Bruce G. '91
Williams, Donald Sidney '66
- VA B** Bowers, Jack W. '80
Ray, Edworth Lillard '48
Lorkowski, Tim Walter '93
- VA Γ** Forkner, Stacey Lynn '96
Martell, Donald Louis '60
Tellier, Ronald Robert '73
Wolff, James F. '59
- WA A** Dschida, Linda Maria '82
Klos, Timothy Allen '88
- WA B**
- WV B**
- WI A**
- WI B**
- WI Γ**

**\$1,000+
Downing Club**

- AL A** Colberg, Richard Dale '80
Glover, Martin Cochran '70
Hawkins, Lawrence Allen '81
Shivers, Charles Herbert '75
Haggard, Warren O. '94
Hamilton, George Seaton '89
- AL Γ** Keeney, Joseph Harry '78
- AK A** LaBelle-Hamer, Brendan Tully '83
- AZ A** Berg, Jeffrey Roy '93
Smith, William G. '78
Tretschok, Cody D. '89
- AZ B** Forster, Karl David '86
Leach, David Robert '76
Roose, Charles Edward '86
Takinen, Scott Alan '79
Wong, Jack Onc '81
- AZ Γ** Dickson, Eric Kenneth '81
- AR A** Reed, John Lee '68
- CA A** Figueira, Michael Robert '73
Mar, Wing Jong '79
McCown, Donald Philip '62
Secor, Kenneth Eugene '55
Wing, Jimmie '52
- CA B** Lalli, Stephen John '86
- CA Γ** Brown, Stephen Lawrence '58
Frantz, Paul James '78
Holsinger, Kevin Karl '84
Ickes, Robert William '65
Madden, Christopher J. '85
Muscha, Leslie Catherine '95
Root, Steven Dale '75
- CA Δ** Barr, Juliana '80
Griffith, Glen Arthur '72
Johnson, Wesley Walter '66
Koppany, Charles Robert '63
Lawson, William Edward '62
- CA E** Hardy, Frederick Walter '65
Hickling, Ron Michael '80
Holzman, Eric Louis '84
Reichert, Ralph Jeffrey '67
Ssutu, Louis '65
- CA Z** Greenley, Dale Robert '86
Lampe, Fred Paul '79
Perrin, Michael Elton '67
Vlahutin, Paul Andrew '65
Wagner, J. Arthur '61
- CA H** Asgari, Ramak '99
Pershon, James M. '79
Rawson, Rollin Fred '61

IN THE COLLEGES

Tau Bates having an impact at institutions of higher learning.

James P. Brill Ph.D.

Texas Alpha '64

James has joined the University of Tulsa (TU) faculty as an Eminent Chair in Petroleum Engineering. A leading expert on multi-phase flow in pipes, he will mentor young faculty, help establish an energy-related center at the college of engineering and computer science, and contribute to TU's new Energy Council. James is an NAE member and TU Fluid Flow Projects creator.



Deborah D.L. Chung Ph.D.

New York Nu '73

Deborah is a University at Buffalo (UB) 2024 President's Medal recipient in recognition of extraordinary service and major contributions. A prolific scholar and UB professor, she is known for her inventions of smart concrete and "Carbon Fiber Composites with Improved Fatigue Resistance" and will be recognized during this year's UB commencement ceremony.



Scott R. Graham Ph.D.

Ohio Eta '99

Scott was named Dean for Research at the Air Force Institute of Technology, Wright-Patterson Air Force Base (OH), where he is also a professor of computer engineering. In this position, he is responsible for managing a \$40 million research program of both federal and non-federal research partnerships. Scott has a Ph.D. in electrical eng'g from the Univ. of Illinois (UIUC).



SPOTLIGHT: Gift to ISU Establishes Department Chair —

A gift commitment to Iowa State University from **John O. Hayes, JD, IA A '66**, and his wife has established the John and Nancy Hayes Department Chair in Mechanical Engineering. This endowed position will recognize an outstanding faculty member and advance the department's academic distinction. The initial chairholder is **Caroline C. Hayes, Ph.D., IA A '83**, (no relation to the donors), who has led the department since 2012. As a researcher, she examines how to design effective systems of people and technology by combining elements of engineering, computer science, psychology, and management science. She has a B.S. degree in math, M.S. in knowledge-based systems, and Ph.D. in robotics, all from Carnegie Mellon Univ.

Trend Sees Postdocs Leaving Academia —

According to the National Institutes of Health (NIH), the number of postdoctoral fellows supported by NIH grants has been steadily falling for 20+ years, with a significant dip after 2020. In addition, the number of postdocs in the biological & biomedical fields has declined 9 percent between 2018 and 2022, according to a survey published on March 20 by the National Science Foundation. This could spell trouble for U.S.-based medical research and development at pharmaceutical and biotech companies as more scientists leave academia for better-paying jobs in industry. Donna Ginther, Univ. of Kansas economist, notes postdocs are critical to R&D as they perform the work in the lab and make important contributions to new scientific discovery.

Christopher D. Harvey Ph.D.

Tennessee Beta '03

Christopher, a Harvard Medical School neurobiology professor, is a 2024 National Academy of Sciences' Troland Research Award winner for his groundbreaking contributions and insights into the neural mechanisms of cognitive control. Two Troland Awards are given annually to recognize unusual achievement by early-career researchers and to further empirical research within the broad spectrum of experimental psychology.



J. Wesley Hines Ph.D.

Ohio Delta '85

Wes was named the 2024 Macebearer for the University of Tennessee, Knoxville, (UTK). This designation is the highest faculty honor – recognizing a distinguished career and commitment of service to students, scholarship, and society. He is a UTK professor & head of the dept. of nuclear eng'g, where he's worked since 1995 with plans to retire later this year. Wes also served as a nuclear-qualified submarine officer in the U.S. Navy.



Jenna R. Jambeck Ph.D.

Florida Alpha '96

Jenna was awarded a 2024 Southeastern Conference (SEC) Faculty Achievement Award and is now eligible to be chosen as the SEC Professor of the Year. She is Regents Professor and Georgia Athletic Association Distinguished Professor of Environmental Engineering at the Univ. of Georgia (UGA). Jenna is also co-founder of the UGA New Materials Institute and heads its Center for Circular Materials Management.



Chris C. McComb Ph.D.

California Rho '12

Chris has been named the Gerard G. Elia Associate Professor of Mechanical Engineering at Carnegie Mellon University. He is also Director of the new Human+AI Design Initiative — helping to prepare the next generation of AI engineering practitioners through teaching and training efforts. Chris is a TBI Fellow (2012), PA Beta Chapter Advisor, and former District 3 Director (2013-23).



Dean S. Papajohn Ph.D., P.E.

Illinois Alpha '85

Dean is a recipient of the 2024 Associated General Contractors Outstanding Educator Award recognizing exceptional educators working with students both in and out of the classroom. A professor of practice for civil & architectural eng'g and mechanics at the Univ. of Arizona, he's garnered 20+ awards for his work as an instructor and construction engineer and is the 2020 TBI-McDonald Mentor.



Karl W. Reid Ed.D.

Massachusetts Beta '84

Karl is the new vice president for equity and inclusion at the Massachusetts Institute of Technology (MIT). He began this position in March, after serving as senior vice provost and chief inclusion officer at Northeastern Univ. Karl earned two degrees from MIT in materials science & eng'g, a doctorate from the Harvard Graduate School of Education, and previously served as NSBE executive director.



FACILITIES: Engineering Hub Opens at University of Nebraska

— Kiewit Hall opened in January of this year on the campus at the University of Nebraska-Lincoln and will act as the academic hub for engineering education. The hall also connects five engineering facilities and is home to the construction management program and the Dean's office. The six-story building was privately funded and offers a mix of multi-purpose classrooms, instructional labs, engineering student services, and makerspaces for student organizations. The "monumental" staircase is a unique feature of the building that rises nearly 100 feet from the lower level to the sixth floor, with five stories of the staircase hanging from the roof instead of being supported on the ground.

New North Dakota State University Engineering Complex

— Thanks to a historic \$25 million gift from **Richard, ND A '65**, and **Linda Offerdahl**, funding from the North Dakota Legislature and other gifts from Doosan Bobcat, Mortenson, and numerous benefactors, plans are underway for a new engineering facility for NDSU's College of Engineering. The Richard Offerdahl Engineering Complex will feature large windows and a centralized interdisciplinary hub, new makerspace, a collaborative design studio, and the precision agriculture headquarters. This will be the college's first major expansion and transformation of its facilities since 1999. Richard has a B.S. in electrical eng'g from NDSU and throughout his business career has always called himself an engineer.

Mitchell L.R. Walker II Ph.D.

Michigan Gamma '99

Mitchell is a professor in Georgia Tech's School of Aerospace Engineering and has been selected as the school's next chair. He previously served as the college's associate dean of academic affairs and began his new role in January 2024. His primary research interests include experimental and theoretical studies of advanced plasma propulsion concepts for spacecraft. Mitchell currently serves as an advisor to the Georgia Alpha Chapter.



Jonathan A. Wickert Ph.D.

California Alpha '85

Jonathan plans to step down as provost at Iowa State University (ISU) on June 30 after 12 years in the role. He is one of the nation's longest-serving provosts and plans to continue on at ISU as a mechanical engineering professor, President's Chair in Engineering, and provost emeritus. Jonathan previously served as dean of ISU's engineering college and as an advisor to the Iowa Alpha Chapter from 2009-12.



Tony X. Xu

California Alpha '07

Tony was the 2024 Commencement Speaker for the University of California, Berkeley, baccalaureate degree ceremony on May 14. He graduated from Berkeley with an industrial eng'g and operations research B.S. degree, is CEO and co-founder of DoorDash (since 2013), and previously worked at Square and eBay. Born in China, Tony came to America with his parents and grew up working in a restaurant alongside his mother.



District Doings

A few images and short summaries from the 2024 District Conferences.

MARCH 25-26, 2024:

District 2

The New York Tau Chapter at Binghamton University was the conference host to 67 students, 4 alumni, 3 advisors, and 9 TBII officials.

Student leaders from 21 chapters in New Jersey and New York were welcomed on Saturday by Chapter Advisor **Deanna J. Mazzamuto, NY T '24**, and Binghamton University President **Harvey G. Stenger Jr., Ph.D., NY D '79**.

District 2 Directors, supported by Executive Councillor **Thomas A. Pinkham IV, MA E '88**, led a chapter operations workshop on reports to Headquarters and the various key activities that chapters participate in throughout the year, such as Election, Initiation, Convention, and officer elections/transitions.

In addition, newly appointed District 2 Director **John F. Moore, NY Pi '88**, was introduced at the conclusion of the Saturday workshop, where a variety of chapter project ideas were presented.

Saturday's dinner offered great networking opportunities and afterwards



[Left to Right] Pinkham, Stenger, and D2 Directors, Anthony Olenik, Sandhiya Kannan, Lara Spinelli, and Moore.

student leaders explored Binghamton in groups according to their interests.

Sunday included three Engineering Futures Professional Development Sessions, a career panel of six alumni, and ended with closing remarks.

The District Directors urged everyone to take the information they learned back to campus to reinvigorate and grow our membership.

APRIL 6, 2024:

District 4

The annual D4 Conference took place at the University of Maryland and was hosted by the MD Beta Chapter. During the conference, attendees discussed recruitment strategies, initiate activities, and performed a mock initiation ceremony. Chapter leaders also had the chance to explore MD Beta's impressive TBII lounge filled with award plaques and memorabilia and visited the Bent monument on campus. As an extra bonus, attendees were treated to samples of Maryland Dairy, a unique ice cream produced only at the University of Maryland.



APRIL 5-6, 2024:

District 7

To kick-off the conference, there was a social gathering Friday night at The Hanger on the University of Dayton (UD) campus. Food and activities were provided, including bowling, playing pool, and board games. Saturday began with a welcome from **Eric F. Spina, Ph.D., PA G '83**, UD's president, and engineering dean **Gül E. Kremer Ph.D., IA A '92**. Association and Headquarters updates were presented by Curt and Tricia Gomulinski, followed by skits on topics such as the role of District Directors, the Ratification Ballot, and initiation best practices. Next, TBII alumni led breakout groups for mentoring in the areas of academia, industry, government, consulting, and "non-traditional" paths. Lastly, a spirited game of "Battle for Toledo," complete with Tau Beta Pi history and fun facts concluded the conference. It was a blast for all involved to make friends and share ideas. A special thanks to the OH Theta Chapter host team that included Chief Advisor **Laura K. Bistrek, P.E., OH Q '97**, chapter president **Kaitrin A. Weber**, and vice president **Alison L. Hardie**.



FEBRUARY 23-24, 2024:

District 12

Fort Collins, Colorado, was the location of the District 12 Conference hosted by the Colorado Delta Chapter at Colorado State University. Executive Councillor and 2024 TBII Vice President **Marla A. Peterson, AZ A '83**, was present to provide Association updates and meet with chapter leaders. Thanks to the D12 Directors for chronicling the conference activities with great images and videos.



APRIL 13, 2024:

District 13

The D13 Conference in Las Cruces, NM, was hosted by the NM Alpha Chapter at New Mexico State University (NMSU). All nine chapters from Arizona, New Mexico, and West Texas attended, along with representatives from the Tucson, Albuquerque, and El Paso Alumni Chapters. This year's agenda included an introduction to chapter operations, an Association update by Executive Director Gomulinski, and an alumni Q&A panel moderated by D13 Director **Christopher Stemple, AZ A '10**. After lunch, Engineering Futures Facilitator **Amy R. Irwin Ball, MS A '91**, presented a session on *first contact* and how to dispel the awkwardness of approaching new people and making conversation. Next, a District Interactive Chapter Exchange covered the four pillars of chapter development – before concluding the day with dinner overlooking the NMSU Aggies' football stadium. A special thanks to Provost **Lakshmi N. Reddi, Ph.D., KS G '82**, Dean **David V. Jauregui, Ph.D., P.E., NM A '92**, Chief Advisor **Juanita G. Miller, P.E., NM A '86**, and chapter president **TJ Bell**, for their assistance.



CHAPTER ETERNAL

Our fellow Tau Bates who are gone, but never forgotten.



Indiana Beta '48

Howard P. Freers

January 30, 2024

During his time at the Ford Motor Company, worked as chief car engineer and helped develop the iconic Boss 302 Mustang, earning him the title "Boss of 302."

The condensed style of these notices is necessary due to the Association's large membership and space limitations in *The Bent*. You may contact the Editor for additional facts (if available) concerning the following deceased members. The assistance of all is earnestly sought in reporting the deaths of Tau Bates, including full name and date of death. You may report the death of a member by sending an email to tbp.memberupdate@tbp.org. Members 100 or more years when passing are identified with "**Cent.**"

ALABAMA

ALPHA AL A

Cammack III, Norphlet G., '49, May 9, 2013.
Haycraft, William R., '52, March 11, 2024.
Adkins Jr., William Penn, '57, March 3, 2024.
Vines Jr., Grady Reubin, '57, June 7, 2013.
Boyd, Michael Arthur, '62, Nov. 1, 2023.
Phinney Jr., Thomas W., '66, March 25, 2024.
Riley, Thomas Hall, '68, no details.
Quintero, Peter Salvador, '74, Nov. 28, 2020.

BETA AL B

Massey, William Eugene, '49, Dec. 14, 2021.
McDuff, Odus Pelham, '52, February 7, 2020.
Ray, Richard Edmund, '52, April 25, 2023.
Megginson, George W., '53, March 23, 2016.
Morgan Jr., William E., '55, Sept. 29, 2007.
Hardin, Edwin Milton, '56, March 8, 2019.
Starner, Bernard M., '56, May 11, 2021.
Asquith, C. Frank, '59, March 18, 2024.
Evers, James Leonard, '59, May 2, 2018.
Conner, Travis Neldon, '60, Dec. 31, 2020.
Huckaby, Gene Erwin, '60, July 15, 2012.
Newton, Michael T., '69, September 26, 2021.

GAMMA AL Γ

Berry, Francis Clifford, '50, January 5, 2013.
Rodgers, Marshall R., '50, Dec. 17, 2014.
Doughty, Lawrence Edwin, '57, Dec. 31, 2020.

ARIZONA

ALPHA AZ A

Hartwein, Kenneth Joe, '53, no details.

DELTA AZ Δ

Espiritu, Matthew Gary, '21, October 17, 2023.

ARKANSAS

ALPHA AR A

Howe, James E., '51, July 4, 2022.
McCutcheon, Martin Jack, '64, Feb. 24, 2023.

CALIFORNIA

ALPHA CA A

Serr, Eugene F., '46, September 13, 2019.
Winzler, John Robert, '51, Dec. 25, 2021.
Inami, Thomas Tatsuichi, '52, Jan. 26, 2022.

BETA CA B

Schnacke, Arthur Warren, '43, Sept. 5, 2013.

GAMMA CA Γ

Glaze Jr., Harry Smith, '54, April 10, 2021.

DELTA CA Δ

Amir, Dov, '57, no details.

EPSILON CA E

Vehrencamp, John E., '50, Jan. 22, 2024.
Garnhart, Gordon Deane, '53, no details.
Ito, Roy Atsushi, '58, May 16, 2023.

ZETA CA Z

Greene Jr., George Andrew, '50, Jan. 4, 2024.

ETA CA H

Fung, Patrick C-K, '74, November 29, 2023.
Blank, Jeffrey Miles, '86, no details.

KAPPA CA K

Teraoka, Earl A., '68, November 29, 2023.
Joa, Carmen Eulalia, '88, March 24, 2024.

UPSILON CA Y

Treleaven, James Edgar, '87, no details.

COLORADO

ALPHA CO A

Anderson, Arvid Neil, '54, February 4, 2024.
Sigut, George, '54, March 14, 2016.
Bucknell, Robert Irving, '57, August 6, 2018.

BETA CO B

Cooley, Jack Stuart, '54, September 7, 2022.
Anson, Wilbur Joseph, '57, Feb. 24, 2020.
Shea, Frank Lee, '58, April 1, 2018.
Beach, John Worth, '60, December 23, 2018.
Mozer, John David, '61, August 23, 2019.
Gustafson, Charles H., '62, April 3, 2022.
Husbands, Herman H., '68, April 18, 2023.
Wilson III, James Harvey, '77, Feb. 7, 2024.

DELTA CO Δ

Kettenacker, William C., '74, Nov. 9, 2023.

CONNECTICUT

ALPHA CT A

Merritt, Richard George, '50, no details.
Peters, Merz Kenton, '55, March 5, 2024.
Carlson, Raymond Gunnar, '56, Jan. 10, 2024.
Alderfer, Clayton Paul, '62, October 30, 2015.
Sheffield, George Vernon, '62, Sept. 1, 2019.

BETA CT B

Mankauskas, Joseph J., '68, April 10, 2018.

DELAWARE

ALPHA DE A

Rainey, Orlando, '81, January 23, 2024.
Martin, Nelson Duane, '89, no details.

DISTRICT OF COLUMBIA

BETA DC B

Lauer, Richard Thomas, '93, Feb. 22, 2021.

GAMMA DC Γ

Taneja, Vivek Chander, '16, February 7, 2024.

FLORIDA

ALPHA FL A

Bryan, James Clifton, '47, August 12, 2018.
Flewellen Jr., William B., '50, Jan. 3, 2023.
Hsieh, Chung Kuo, '54, May 10, 2015.
Knab, Charles Eugene, '57, Sept. 1, 2017.
Horsman, Paul Francis, '59, July 19, 2021.
Marschall, Bruce Robert, '76, no details.

GEORGIA

ALPHA GA A

Brunson Jr., Robert C., '43, Jan. 24, 2024.
Baldwin, John Stiles, '44, no details.
Schootley Jr., Glenn G., '48, October 22, 2007.
Lowrey, Edwin Joseph, '49, October 30, 2023.
Bishop Jr., Harvey Eugene, '51, Jan. 22, 2022.
Carlin Jr., Dennis, '53, June 28, 2017.
Perrine, William Everett, '54, Feb. 6, 2024.
Morton Jr., Elmer L., '55, August 30, 2023.
Westbury Jr., Thomas J., '56, Oct. 28, 2019.
Gilmer, Teddy Wade, '57, April 1, 2022.
Todd, Aaron William, '59, April 5, 2007.
Blythe Jr., Ralph Allison, '60, Sept. 8, 2016.
Abernathy, Ernest Maxey, '61, Jan. 25, 2022.
Tuller, Frank Norman, '66, February 12, 2019.
Dykman Jr., Ralph Wallace, '94, July 13, 2018.

IDAHO

ALPHA ID A

Marks Jr., John R., '77, May 16, 2014.

ILLINOIS

ALPHA IL A

McKinstry, Robert Bruce, '46, Dec. 22, 2023.
Loos, James E., '51, March 24, 2022.
McGinnis, Gerald Edward, '58, Jan. 25, 2024.
Burnham, Robert Danner, '66, June 29, 2023.

BETA IL B

Fencl, Edward Raymond, '50, Dec. 9, 2020.
Krichbaum, Donald W., '60, Jan. 22, 2021.
D'Ambrosia, Richard D., '77, March 19, 2016.
Nelson, Emily Sue, '83, no details.

GAMMA IL Γ

Bond, Howard Allen, '44, May 12, 2023.
Trenkle, Edwin Anthony, '44, Dec. 31, 2014.
Brown, Robert Lee, '47, May 10, 2024.
Heinze, Robert W., '47, no details.
Anderson, Ronald William, '56, June 11, 2016.
Stokes, James Leslie, '59, January 12, 2019.
Irish, Eugene Kelley, '61, January 29, 2021.

DELTA IL Δ

Sakolosky, James Joseph, '64, April 13, 2020.

INDIANA

ALPHA IN A

Garman, Harold Glenn, '48, August 13, 2019.
Feldman, Melvin J., '50, December 9, 1999.
Butler, Richard William, '53, Oct. 17, 2018.
Jenkins, Charles M., '54, June 7, 2021.
Roth, Douglas Jack, '54, November 28, 2002.
Berkowitz, Edwin Lionel, '55, no details.
Liedl, Gerald LeRoy, '55, November 12, 2023.
Brucker, Jerry William, '57, Dec. 20, 2020.
Schultz Jr., Max Lewellyn, '57, Oct. 18, 2011.
Novoryta, Robert John, '58, Nov. 27, 2014.
Bartels, Robert Eugene, '59, July 17, 2015.
Klueh, Ronald Lloyd, '61, March 23, 2024.

Henderson, James Paul, '63, June 29, 2023.
Phillips, Winfred Marshall, '63, Feb. 24, 2024.
Ferguson, Daniel M., '13, November 8, 2023.

BETA IN B

Freers, Howard Proctor, '48, Jan. 30, 2024.
Sachs, Larry Allen, '66, January 9, 2024.

GAMMA IN Γ

Stalcup, Dana L., '83, July 18, 2023.

IOWA

ALPHA IA A

Clyde, Gordon Frank, '42, no details.
Untrauer, Raymond E., '48, March 11, 2024.
Crowley, Paul Rodney, '51, July 5, 2020.
Hall, Harold Clifford, '53, February 17, 2020.
Crouse, James Ervin, '57, January 22, 2019.
Rowe, Richard Jay, '57, no details.
Swanson, Larry Ray, '59, January 10, 2020.
Rice, Dwight Eugene, '60, February 1, 2023.
Turpin, Richard Harold, '62, August 28, 2023.
Rowe, Alvin George, '63, January 21, 2014.
Buffington, Gregory D., '67, October 27, 2023.
Myers, Thomas Tritt, '69, May 27, 2023.

BETA IA B

Kehn, Donald M., '44, March 18, 2017.
McMillin, John V., '56, December 7, 2023.
Aron, Gert, '58, December 1, 2023.
Ruppert, Keith Donald, '60, July 15, 2023.
Snyder, Max Duane, '63, February 22, 2024.

KANSAS

ALPHA KS A

Stovall, Jack P., '49, May 16, 2023. *Cent.*
O'Brien, Harry G., '59, November 13, 2022.
Teague, William Francis, '61, June 18, 2016.
Straight, James William, '63, no details.

BETA KS B

Malas, David William, '72, January 19, 2024.
Denesia, Thomas Edwin, '74, Nov. 4, 2023.

KENTUCKY

ALPHA KY A

Craig, Joe Lockett, '50, January 12, 2024.
Romanowitz, Byron Foster, '51, Nov. 28, 2022.
Hummel, Wendell Palmer, '64, Jan. 21, 2024.
Stephens, Michael M., '79, Dec. 31, 2023.

LOUISIANA

ALPHA LA A

Boston, Edward D., '44, February 14, 2022.
Palmer Jr., Aubrey King, '48, Oct. 22, 2009.

GAMMA LA Γ

Perdreauville, Farrell J., '59, August 13, 2021.
Williams, Ryan Allen, '68, no details.

MAINE

ALPHA ME A

Hanson, Harold W., '53, April 2, 2024.

MARYLAND

ALPHA MD A

Hessemer, Paul Bernhart, '49, Nov. 2, 2022.
Hutchins, James Peyton, '54, Nov. 30, 2020.
Ragonese, Paul Phillip, '67, March 14, 2024.

BETA MD B

Robinson, Norman Oliver, '55, no details.
Dammann, Carl Leslie, '61, April 10, 2020.
Frazier, Robert Allan, '64, no details.
Baker, Daniel Leslie, '72, Sept. 19, 2023.

MASSACHUSETTS

ALPHA MA A

Cross, Kenneth Boyden, '54, April 14, 2019.
Hamel, Peter J., '81, no details.

BETA MA B

Bourne Jr., Henry Clark, '44, March 25, 2010.
Peake, William Tower, '51, Sept. 11, 2017.
Honigsberg, Charles Alan, '52, Oct. 29, 2023.
Hoffman, Allan Sacks, '53, Dec. 15, 2023.
Lehmann, William B., '55, January 19, 2024.
Wilbourn, David Straight, '55, Sept. 14, 2023.
Burtis, Evenson Mack, '60, January 10, 2018.
Schaffer, Michael Joel, '63, March 10, 2023.
Fichtenbaum, Matthew L., '66, May 20, 2022.
McKenna, Betty Jean, '66, May 20, 2017.

DELTA MA Δ

Farnham, Leon Lawrence, '43, no details.
Beck, James Vere, '56, July 28, 2022.
Hunt, Robert Francis, '59, April 6, 2024.

EPSILON MA Ε

Jonah, Maxwell Victor, '55, October 14, 2023.
Curtis III, John O., '71, March 21, 2024.
Mores, David C., '72, February 13, 2024.

ZETA MA Ζ

Gusciora, Kenneth Henry, '69, Oct. 17, 2023.

THETA MA Θ

Bischoff, Frederick B., '51, August 7, 2022.

IOTA MA Ι

Musiak, Ronald E., '68, January 4, 2024.

MICHIGAN

ALPHA MI A

Plomer Jr., Edward J., '43, Feb. 8, 2022. *Cent.*
Satchell, Frederick E., '44, January 17, 2014.
Keech, Donald Kesler, '51, July 28, 2023.
Ballast, Donald Earl, '52, January 1, 2017.
Rood, William Robert, '53, June 13, 2018.
Lask, Kay Victor, '56, October 31, 2023.
Buxton, Charles Elmer, '58, July 18, 2014.
Foy, Russell Howard, '58, December 18, 2020.
Riddle, Robert Vance, '58, April 28, 2023.
Nemec, James G., '60, November 18, 2018.
Wirth, Robert Louis, '60, no details.
Feikema, Herman C., '64, January 25, 2015.

BETA MI B

Grenquist, Kenneth A., '53, April 30, 2022.
Wark Jr., James Gordon, '53, June 16, 2015.
Coleman, Thomas A., '57, June 29, 2021.
Visser, Melvin John, '59, January 2, 2021.
Hamelink, Jerry H., '63, October 15, 2023.
Schieman, David F., '64, October 23, 2019.
Anderson, Roger Hugo, '65, January 21, 2024.
Weston, Thomas J., '65, August 25, 2023.

GAMMA MI Γ

Van Wylen, Gordon J., '42, Nov. 5, 2020. *Cent.*
Gavern, Stanley Morton, '50, March 7, 2014.
Hendricks, Roger Jay, '50, Dec. 26, 2022.
Byce Jr., Richard Charles, '51, Dec. 24, 2021.
Gire, James Edward, '51, June 8, 2004.
Webb, Hubert Charles, '52, Dec. 2, 2010.
Buczek Jr., Anton Frank, '55, Nov. 30, 2012.
Andersen, Roger Arnold, '56, Nov. 2, 2018.
Hawk, Norman Eugene, '56, Feb. 6, 2024.
De Groot, Loren Edward, '57, October 7, 2022.
Lave Jr., Roy Ellis, '57, June 27, 2023.
Matloch, Charles Delridge, '57, Feb. 18, 2023.
Pollock, Herbert W., '57, March 20, 2023.
Heidgen, John Edward, '58, no details.
Williams, David Gerald, '58, January 23, 2023.
Mutchler, John Edwin, '63, January 23, 2015.

DELTA MI Δ

Wall, Raymond J., '50, January 14, 2023.
Huber, Paul Perry, '57, March 23, 2023.

EPSILON MI Ε

Duquet, Ernest Albert, '50, June 19, 2012.
Baars, William Erwin, '51, June 13, 2019.
Stynes, Stanley Kenneth, '55, Oct. 19, 2019.
Bolcer, Edward Richard, '58, June 3, 2005.
Stoetzner, Clarence A., '59, April 24, 2019.
Stallard, Alan James, '71, February 6, 2007.

ZETA MI Ζ

Smith, Robert Nathan, '50, March 27, 2018.
Brink, Michael J., '62, March 4, 2015.
Martich, Mark Edward, '79, no details.

ETA MI Η

Cook, Kenneth John, '64, March 21, 2024.
Bowen, Chad Michael, '05, Sept. 12, 2018.

KAPPA MI Κ

Schultz, Kurtis Walter, '89, July 31, 2013.

MINNESOTA

ALPHA MN A

Meyer, Raymond Edward, '52, Aug. 21, 2023.
Prickett, Gordon Odin, '58, December 8, 2023.
Carr, Raymond Walter, '69, Feb. 11, 2023.

MISSISSIPPI

ALPHA MS A

Gee, Yett Lin, '50, December 15, 2015.
Bouchillon, Charles W., '53, Nov. 15, 2023.
Gross Jr., Elwin Eldridge, '55, Nov. 12, 2017.
Broome, Thomas Houston, '87, May 21, 2023.

MISSOURI

ALPHA MO A

Morrison, Stanton Ross, '50, Dec. 10, 2017.

BETA MO B

Valleroy, Vincent V., '48, no details.
Anderson, Truman Dale, '55, July 29, 2006.
Varsos, Spyros G., '55, no details.
Herndon, Richard S., '56, March 13, 2024.
Kissling, Don Lester, '58, April 10, 2013.
Stelloh, Robert Theodore, '59, July 15, 2014.
Coffman, James Dean, '60, October 27, 2018.
Wolf Jr., William John, '61, October 10, 2015.
Tuttle, Joey K., '64, March 8, 2024.

GAMMA MO Γ

Watson, Clayton, '54, May 3, 2023.
Gonzalez, Alfred Anthony, '55, Feb. 10, 2020.
Lohkamp, Dwight, '61, November 21, 2003.

MONTANA

ALPHA MT A

Fisk, Donald Arthur, '48, no details.
Kimmet, Steven George, '79, no details.
Fussell, Paul Stephen, '81, August 4, 2019.

NEW HAMPSHIRE

ALPHA NH A

Ignaszewski Jr., Clyde Joseph, '49, no details.
Dupuis, Calvin Samuel, '75, no details.

NEW JERSEY

ALPHA NJ A

Helfrich, John Hurlburt, '50, April 13, 2021.
Straut Jr., Harold J., '53, January 26, 2024.
Feggeler, John C., '60, September 28, 2021.
Halpern, Gerald Martin, '60, June 19, 2023.
Guerrero, Joseph Ralph, '62, May 9, 2016.

BETA NJ B

Mahon, Roger F., '64, February 20, 2024.

GAMMA NJ Γ

Dorman, Albert, '45, November 14, 2023.
Churchill, Charles Earl, '60, July 17, 2019.
Darbie, Arthur M., '61, April 8, 2021.
Sikorsky, Michael Frank, '61, April 26, 2016.

CHAPTER ETERNAL

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GAMMA NJ Γ

Golub, Eugene B., '62, February 20, 2017.
Vogel, Edward Henry, '62, May 20, 2023.
Notte, Angelo Joseph, '63, January 26, 2021.
Praschak, Joseph John, '73, Feb. 14, 2024.
Sadle, Elliott S., '76, April 1, 2023.

DELTA NJ Δ

Kobayashi, Hisashi, '61, March 9, 2023.

NEW MEXICO

ALPHA NM Α

Mares, Gilberto, '76, February 28, 2024.
McKinley, Mark W., '76, March 19, 2024.

NEW YORK

ALPHA NY Α

Florman, Samuel C., '44, February 4, 2024.
Schneider, Philip, '50, July 4, 2022.
Shrier, Adam Louis, '59, September 30, 2023.
Alfano, Edward James, '05, May 25, 2015.

BETA NY Β

Truskalo, Walter, '61, April 25, 2017.
Smith, Stanford Scott, '81, no details.

GAMMA NY Γ

Mitchell, James Kenneth, '51, Dec. 17, 2023.
Park, John N., '53, February 27, 2024.
Dooley, Gerald Francis, '59, June 22, 2017.
Gentz Jr., Charles Henry, '61, July 28, 2021.

DELTA NY Δ

Matson, Stephen Lee, '71, Nov. 27, 2023.
Wolkenberg, Brian Stork, '96, no details.

EPSILON NY Ε

Hauptman, Marvin Howard, '59, July 25, 2020.
Pressel, Philip, '59, October 18, 2023.
Maydet, Steven I., '74, no details.

ZETA NY Ζ

Von Riesemann, Walter A., '58, March 9, 2022.
Choma, Peter, '73, June 7, 2023.

ETA NY Η

Levine, Joseph, '50, no details.
Sugin, Leonard, '55, November 23, 2023.
Gelb, Arthur, '58, November 8, 2023.
Woinsky, Melvin Neil, '60, June 9, 2014.
Heffes, Harry Bee, '62, September 3, 2016.

THETA NY Θ

Dalphin, Richard James, '53, June 27, 2023.
Kotary, Patrick F., '53, March 4, 2024.
Farmer, Daniel Eugene, '56, July 18, 2020.
Myers, Edward James, '74, no details.

IOTA NY Ι

Hillenbrand, Gerard Richard, '58, no details.
Svedosh, Ludvik, '60, no details.

KAPPA NY Κ

Helwig, Joseph D., '48, January 24, 2023.
Eastman, Jay Morgan, '70, April 20, 2023.

LAMBDA NY Λ

Traina, Edward P., '62, April 9, 2022.

NU NY Ν

Nowak, Michael A., '76, January 22, 2024.
Logory, Larry M., '90, May 25, 2020.

XI NY Ξ

Thornton, Charles H., '61, Dec. 12, 2023.
Latus, Donald George, '67, August 14, 2021.

PI NY Π

Yoder, Brian Edward, '79, May 5, 2023.
Rogerson, Phillip Andrew, '98, Dec. 30, 2023.

NORTH CAROLINA

ALPHA NC Α

McAllister, Robert Allen, '47, July 23, 2011.
Phifer, Addison Keith, '57, March 9, 2019.
Nuckolls, Joe Allen, '58, June 16, 2016.
Cocke, William Johnston, '59, July 4, 2022.
Hilburn, David Bright, '59, January 19, 2016.
Long Jr., Thomas B., '59, December 11, 2023.
Wortman, Jimmie J., '60, June 28, 2016.

GAMMA NC Γ

Blyth, Jon Richard, '60, March 7, 2023.

DELTA NC Δ

Cochrane, Eric Ranson, '78, March 3, 2024.

NORTH DAKOTA

ALPHA ND Α

Johnson, Leroy George, '58, January 5, 2023.

OHIO

ALPHA OH Α

Schaffir, Kurt Herbert, '45, Dec. 31, 2022.
Rebman, Jack, '46, June 13, 2013.
Hendrie, Joseph Mallam, '50, Dec. 26, 2023.
Scotchie, Andrew Albert, '54, Jan. 1, 2017.
Kinney, Ralph Vincent, '58, August 20, 2021.
McKeever, John Ward, '60, March 10, 2015.
Stauffer, John Richard, '74, January 29, 2021.

BETA OH Β

Burgasser, Martin Chris, '61, May 19, 2023.
Stergiopoulos, James M., '61, July 7, 2021.
Kisner, Amy Nichols, '82, January 24, 2024.

GAMMA OH Γ

Rownd, Robert M., '47, December 26, 2021.
Miller, Richard Herron, '51, April 15, 2016.
Niesz, Dale Edward, '62, no details.
Wright, Thomas R., '62, September 11, 2018.
Wood, David Balharie, '63, August 31, 2020.
Zellner, Ivan Lewis, '85, December 28, 2023.

DELTA OH Δ

Kalagidis, Memorial, '54, March 27, 2024.
Davidson, Lynn E., '76, December 20, 2023.

EPSILON OH Ε

Plummer, Michael Joseph, '61, Feb. 1, 2019.

ZETA OH Ζ

Young, David D., '58, January 24, 2024.

ETA OH Η

Houpis, Constantine Harry, '47, April 9, 2020.

KAPPA OH Κ

Bennett, Ronald Quentin, '76, Sept. 17, 2023.

MU OH Μ

Dixon, Robert Dan, '58, November 17, 2022.

OKLAHOMA

ALPHA OK Α

Grieves, William Arthur, '46, Nov. 30, 2021.

GAMMA OK Γ

Dornblaser, John Douglas, '74, no details.

OREGON

ALPHA OR Α

Kedl, Bob Joseph, '51, November 24, 2005.
O'Brien, Robert Merle, '56, January 23, 2024.

PENNSYLVANIA

ALPHA PA Α

Born, Ira Brahm, '44, January 29, 2023.
Close, Charles Mollison, '50, no details.
Grim, Robert Osborne, '52, March 12, 2020.
Meeh Jr., Erwin Gustav, '53, Nov. 16, 2022.
Stover, Raymond Webster, '60, Dec. 2, 2019.
Toikka, William Eric, '62, January 11, 2022.

BETA PA Β

Hosler Jr., Charles Luther, '47, Oct. 29, 2023.
Biss, David J., '68, February 15, 2024.
Servich, Frank Joseph, '79, July 10, 2019.

EPSILON PA Ε

Yarotsky, Marvin, '43, February 16, 2017.
Levin, Herbert Louis, '48, June 10, 2018.
Hordendorf, Thomas, '62, Nov. 14, 2018.

ZETA PA Ζ

Louie, Harry Richard, '48, Nov. 24, 2022.
Tognella, Ugo Robert, '48, August 13, 2016.
Shapiro, Mark, '73, September 20, 2022.

ETA PA Η

Sheridan, Marlin Lee, '43, September 2, 2017.
Mardaga, Louis William, '44, May 24, 2005.
Skiff, John Fish, '56, February 18, 2024.

THETA PA Θ

Rice, William James, '47, February 10, 2020.
Harrington III, James Walter, '55, no details.
Parzygnat, William J., '62, April 30, 2022.

LAMBDA PA Λ

Gillott, Donald H., '56, December 23, 2023.

RHODE ISLAND

ALPHA RI Α

Whitney, Frank Coole, '55, April 6, 2005.

BETA RI Β

CarlL, Alfred Reginald, '63, March 9, 2023.

SOUTH CAROLINA

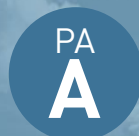
ALPHA SC Α

Siokos, George Zachary, '48, May 2, 2023.
Elrod, William Corbin, '49, Feb. 23, 2024.
Gambrell Jr., Samuel C., '57, Oct. 31, 2020.
Jones Jr., James Hoyt, '57, May 4, 2021.
McIntyre, Herman Bruce, '60, Jan. 15, 2024.
Skelton, Robert Eugene, '63, Feb. 15, 2023.
Henderson, Harold J., '92, March 31, 2017.
Wolozyn, David Christopher, '97, no details.



New York Eta '58
Arthur Gelb, Sc.D.
 November 8, 2023

President of Four Sigma Corp., engaged in financial algorithmic trading methods. He served as president and CEO of The Analytic Sciences Corp., which he co-founded.



Pennsylvania Alpha '44
Ira "Bob" Born
 January 29, 2023

Former president of the candy company Just Born, where he invented Hot Tamales and created the process to mass-produce Peeps.

BETA SC B

Parsons Jr., James Hilton, '49, July 24, 1993.
 Fletcher, Oren Soule, '50, June 4, 2023.
 Chapman Jr., Charles Lee, '56, Jan. 22, 2024.
 Ketchen, Frank William, '57, Nov. 13, 1993.
 Alvarez, Alberto Gaston, '60, Oct. 28, 2023.
 Mann Jr., Willie Franklin, '60, Dec. 18, 2021.
 Wengrow, Henry Ray, '60, October 12, 2017.
 Church, Donald Stanley, '63, Dec. 12, 2017.
 Lee Jr., Thomas Knox, '63, May 2, 2011.
 Pettus, Robert Olin, '63, December 4, 2017.

GAMMA SC Γ

White III, Guy Haywood, '56, October 26, 2022.

TENNESSEE

ALPHA TN A

Burka, John Morgan, '49, April 25, 2023.
 Scott, James Louis, '52, March 31, 2023.
 Stickle, Gene Paul, '53, May 23, 2015.
 Wymer, Raymond G., '53, July 13, 2022.
 Bright, George R., '55, March 19, 2021.
 Hendrix, Donald Elliot, '55, May 27, 2022.
 Gibson Jr., Robert Ewing, '57, June 5, 2021.
 Willis, William F., '58, February 12, 2023.
 Dewitt, Bill Floyd, '59, July 1, 2022.
 Holland, John Rickman, '60, no details.
 Robinson, James Conda, '60, March 11, 2024.
 Browning, Sally Eldridge, '83, May 22, 2013.

TEXAS

ALPHA TX A

Smalling, Jack Warren, '41, Jan. 15, 2018.
 Blaney Jr., William Hector, '46, Feb. 23, 2017.
 Behrens, Paul D., '47, August 15, 2023.
 Blume, James D., '47, March 16, 2016.
 Capshaw, Thomas David, '48, Aug. 14, 2006.
 Kittrell, Norman G., '48, July 31, 2019.
 Sharp Jr., Carle Farrell, '48, Nov. 17, 2022.
 Vela, Macedonio Angel, '48, Sept. 13, 2022.

Thompson III, Robert A., '55, June 29, 2017.
 Yows, John Ben, '57, October 26, 2019.
 Underwood, Joe Byron, '65, June 14, 2022.
 Holland Jr., Royce J., '71, March 27, 2024.
 Hughson, Montgomery C., '84, no details.
 Rusch, Stephen E., '84, no details.

BETA TX B

Lewis, Joe Ben, '47, October 15, 2014.
 Wilterding, Jack Eldon, '56, January 23, 2013.
 Hermesmeyer, Charles E., '61, Feb. 18, 2023.

GAMMA TX Γ

Ehrhardt Jr., Charles D., '41, Feb. 21, 2005.
 Hacke, George Harold, '44, May 13, 2011.
 Chapman, Alan Jesse, '45, Dec. 4, 2007.

DELTA TX Δ

James Jr., Ross Daniel, '46, January 6, 2019.
 Baker, Quin M., '48, February 9, 2012.
 Guy Jr., Arthur Lee, '48, May 1, 2015.
 Klotz, Bill Wayne, '48, June 10, 2020.
 McClelland, Robert Henry, '55, Jan. 21, 2024.
 Brown, James Benard, '58, Feb. 20, 2024.
 Redding, Billy Jack, '62, February 8, 2016.
 Skala, Ronnie Glen, '81, October 29, 2023.
 Savage, John Dennis, '82, March 13, 2023.

EPSILON TX E

Whitaker, Thomas Norman, '42, Dec. 6, 2013.
 Heffler, Walter E., '48, February 13, 2011.
 Spencer, Glenn Winfield, '58, no details.
 Lamonte Jr., Charles J., '63, May 1, 2022.

ETA TX H

Guinn, Douglas Edward, '78, Nov. 18, 2023.

LAMBDA TX Λ

Magee, Dan Albert, '66, December 2, 2023.

UTAH

ALPHA UT A

Stewart, William, '60, no details.

Wilbur, Paul James, '60, February 17, 2019.

BETA UT B

Murphy, Sheldon Rowley, '61, Oct. 15, 2016.

VIRGINIA

ALPHA VA A

Bowman, Twyman E., '54, March 10, 2024.

BETA VA B

Gerngross, John Eugene, '47, June 26, 2014.
 Hissey Jr., Theodore W., '48, Oct. 14, 2023.
 Lester, Jerry C., '59, December 21, 2023.
 Koelling, Henry Richard, '65, Sept. 18, 2023.

WASHINGTON

ALPHA WA A

Beckman, Tsuruye Jane, '75, Aug. 11, 2019.
 Werre, Dale Allen, '81, April 21, 2023.

BETA WA B

Kraemer, Henry Philip, '49, January 15, 2017.
 Tupper, Leland Chester, '50, Dec. 30, 2018.
 Desposato, Francis E., '51, May 28, 2021.

GAMMA WA Γ

Jokela, Sarah, '88, March 28, 2022.

WEST VIRGINIA

ALPHA WV A

Snider, Earl Jay, '62, February 3, 2020.

WISCONSIN

ALPHA WI A

Dassow, Larry Otto, '60, August 16, 2016.
 Prielipp, Russell Carl, '60, May 11, 2019.

BETA WI B

Schmitt, James L., '47, March 14, 2024. **Cent.**
 Durante, Thomas Gerard, '78, no details.

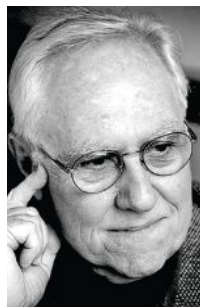
GAMMA WI Γ

Kuhl, Kevin James, '07, February 13, 2023.

HONORING SAMUEL C. FLORMAN

Samuel C. Florman P.E., NYA '44, was a civil engineer, general contractor, and author, best known for his writings and speeches about engineering and the relationship of technology to the general culture. The most widely distributed of his seven books is *The Existential Pleasures of Engineering*, first published in 1976.

A longtime chairman of Kreisler Borg Florman Construction Company, he joined Tau Beta Pi as an eminent engineer in 1983. His contributions to the Association include six feature articles for *The Bent* between 1997 and 2015 – www.tbp.org/bent-features.cfm#feature – and as a featured speaker at the



1984 Convention in Tempe, Arizona. Mr. Florman earned his B.S. in 1944 and his C.E. in 1946 from the Thayer School of Engineering at Dartmouth, and a master's degree in English literature from Columbia University in 1947.

In 1995, he was elected to the National Academy of Engineering "for literary contributions furthering engineering professionalism, ethics, and liberal engineering education."

Mr. Florman was a fellow of the American Society of Civil Engineers and was awarded the 1982 Ralph C. Roe Medal by the American Society of Mechanical Engineers in recognition of the individual "who has contributed most effectively to a better understanding and appreciation of the engineer's worth to contemporary society."

Born in 1925, he passed away on February 4, 2024 at the age of 99.

QATAR ALPHA



QATAR ALPHA

was welcomed as a Tau Beta Pi Chapter on March 5, 2024. Past Executive Councillors George Youssef, *NJΓ '01*; Mennatoallah M. Youssef, Ph.D., *VAΓ '04*; and Russell W. Pierce, *WIA '70*, joined Executive Director Curtis D. Gomulinski, *MI E '01*; and Director of the District Program Stacey L. Forkner, *WIA '96*, in traveling to Texas A&M University at Qatar to formally install the Society's 263rd collegiate chapter.

Texas A&M University at Qatar was the site of the first international initiation on April 20, 2011, when 20 people became members of the Association. The group has existed as a sub-chapter (Texas Delta Qatar) of the Texas Delta Chapter in College Station over the past 13 years while the desire for an independent chapter has strengthened over the years. President Amna I.T. Cassim, *TX Δ '24*, and Vice President A. Joshua S. Gunananda Muni, *TX Δ '25*, along with Chief Advisor Annie Ruimi, Ph.D., *CA E '93*, traveled to the 2023 Convention in Atlanta, GA, to petition for an independent Tau Beta Pi chapter. The Convention granted a charter for an independent chapter which was installed just two days after the installation of the

Association's first independent international chapter. Unfortunately, Dr. Ruimi left Texas A&M University at Qatar prior to the formal installation.

INITIATION AND INSTALLATION

While there were already members of Tau Beta Pi present on the Texas A&M University at Qatar campus, a formal ceremony was held in the engineering building to initiate the inaugural members of Qatar Alpha and formally install the new chapter. The initiation team consisted of the five Association Officials listed previously, the two student officers who attended the 2023 Convention, Amanda L.C. Cruz, *TX Δ '25*, and Albertus Retnanto, Ph.D., *TX Δ '90*. Members of Texas Delta Qatar witnessing the initiation included Mohammed Ishaq M.S. Ansari, '24; Mohammed Yaqoob M.S. Ansari, '24; W. Ushara O. De Silva, '24; Muhammad F. Hanif, '25; and Anurag Srivastava, '20.

Twenty-one undergraduates comprise the charter members of Qatar Alpha. Witnessing the chapter installation included the members listed above and additional Texas Delta Qatar sub-chapter members including: Mohammad N. Alassi, '24; Alyaa Y. Al-Jaber, '24; Nawaf H. Al-Mahsin, '24; Beena R.

Debnath, '23; Mohamad El Halabi, '24; Patrick Linke, Ph.D., '96; Hazem N. Nounou, Ph.D., '95; and Vishmi M. Singapura, '24. Mr. Youssef served as the installing deputy and constituted the charter members into a new chapter in the official ceremony of installation following the initiation. The ceremony included the formal election and installation of the chapter's charter officers and advisors.

BANQUET

Following the installation ceremony, Executive Councillors Emeriti Youssefs, Executive Director Gomulinski, and Director of the District Program Forkner each congratulated the new members on their initiation and being part of this historic event. Chapter President Cassim and Chief Advisor Renanto added their congratulations and presented membership certificates to the newest members.

Everyone proceeded to the Link Atrium where Dean César O. Malavé, Ph.D. P.E., *TX Δ '81*, congratulated the newest members of Tau Beta Pi. Everyone enjoyed the reception where all the honor societies at Texas A&M University at Qatar highlighted their achievements over the past year.



First Officers (left to right)

Hazem Nounou, Albertus Retnanto, Joshua Gunananda Muni, Amna Cassim, Amanda Cruz, and Russ Pierce.



Charter Presentation (left to right)

Albertus Retnanto, Amna Cassim, George Youssef, and Curtis Gomulinski.



Initiation Team (left to right)

Curtis Gomulinski, Stacey Forkner, Albertus Retnanto, Joshua Gunananda Muni, George Youssef, Amna Cassim, Amanda Cruz, Menna Youssef, and Russ Pierce.



Everyone in attendance for the Qatar Alpha installation



UNITED ARAB EMIRATES ALPHA

UAE ALPHA

was installed as Tau Beta Pi's First Independent International Chapter on March 3, 2024, at the American University of Sharjah. Past TBPI President Mennatoallah M. Youssef, Ph.D., *VA Γ '04*, was the official installing deputy of the Society's 262nd collegiate chapter, assisted by Executive Director Curtis D. Gomulinski, *MIE '01*; Director of the District Program Stacey L. Forkner, *WI A '96*; and past Executive Councilors Russ W. Pierce, *WA A '70*, and George Youssef, *NJ Γ '01*.

The 2023 Convention granted a chapter to the Engineering Honor Society at the American University of Sharjah (AUS), represented in Atlanta, GA, by Chief Advisor Imran A. Zualkernan, Ph.D., *MN A '83*. Because of the time required to obtain visas to the United States, no students from AUS were able to attend the Convention.

INITIATION AND INSTALLATION

The Main Building on the American University of Sharjah campus was the site of the formal ceremonies of initiation and chapter installation.

The initiation team was led by Dr. M. Youssef, the four Association Officials listed previously, and Chief Advisor Zualkernan. Forty-seven undergraduates, seventeen alumni, and one eminent engineer comprise the sixty-five charter members of the Association's first international chapter.

Immediately after the formal initiation, the new members were constituted a new chapter in the ceremony of installation conducted by Dr. Youssef. The installation team and new members were joined by TBPI alumni including: Fadi A. Aloul, Ph.D., *MI H '97*; Ghaleb A. Hussein, Ph.D., *UT B '97*; Lotfi Romdhane, Ph.D., *FL A '88*; and Elias B. Sayah, Ph.D., *CA E '80*. The ceremony included the formal election and installation of the chapter's charter officers and advisors.

BANQUET

Following the installation ceremonies, Executive Director Gomulinski welcomed the newest members to the Association and congratulated the chapter's officers, advisors, and alumni for their diligent work over the past

several years to bring the first international chapter of Tau Beta Pi to fruition. Dean of the AUS College of Engineering, Fadi Aloul, added his congratulations to the newest members of TBPI. He expressed excitement around having the first international chapter of Tau Beta Pi and challenged the new members to keep up the good work in recognizing the outstanding students in the United Arab Emirates. He indicated that he believed additional schools in the region would follow the lead of AUS in bringing Tau Beta Pi to their campuses.

The new members of UAE Alpha along with the alumni headed outside the Main Building on the AUS campus where several photos celebrating the momentous day were captured for posterity.

A banquet celebrating the occasion of the chapter's installation was held on the third floor dining area of the Main Building. Dean Aloul and Dr. Zualkernan shared their excitement about the new chapter's establishment following the dinner.



Initiation Team (left to right)
 Imran Zualkernan, Menna Youssef, Stacey Forkner,
 Curtis Gomulinski, Russ Pierce, and George Youssef.



Charter Presentation (left to right)
 Imran Zualkernan, Youssef Eldib,
 Menna Youssef and Curtis Gomulinski.



Advisors, Faculty, and Officers (left to right)
 Salsabeel Shapsough, Salwa Beheiry, Lotfi Romdhane, Ghaleb Hussein, Imran Zualkernan, Fadi A. Aloul,
 Jood Shinawi, Angelo Cabarloc, Youssef Eldib, Rana Awwad, Sara Mohamed, Lamis Elsayed, Lina Salman.



Charter Members of United Arab Emirates (UAE) Alpha



Texas Gamma Bent at Rice University.



BENTSPEdition

A 'MONUMENTAL' ADVENTURE — BY NICHOLAS R. DIVILBISS, KANSAS GAMMA '25

INTRODUCTION

“Hello Kansas Gamma...” our Instagram followers have grown accustomed to hearing that lately. My name is Nick and I have the honor and privilege of serving as the 85th president of the Kansas Gamma Chapter at Kansas State University (K-State). Some say I’m obsessed with Bents; of that I will let you be the judge. **By March 2025, I will personally have visited every collegiate chapter in the world.** With this article, I humbly bring you: *The Bentspedition*

This is an unprecedented adventure of a scale that I’ve never experienced. However ridiculous it may seem, I can tell you wholeheartedly that it has been a life-changing experience. Technically speaking, it can be achieved by anyone with a driver’s license and a passport, and my rules are quite simple: Personally visit all active collegiate chapters; no flying unless driving is impossible; and finally, hotels are off limits.

Following these three rules, I have to date, visited 103 of 257 active collegiate chapters. That is every chapter in Alabama, Arkansas, Florida, Georgia,

Illinois, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Virginia, and Wisconsin, along with many chapters in Indiana, Ohio, Texas, and West Virginia. Geographically, much has been accomplished with more than 13,500 miles driven and 2,200 miles flown since the journey began on December 17, 2023.

I don’t wish to bore you with a complete recollection of events, so this article focuses on just a few key happenings. While reading the article, you will learn about some highlights of the Bentspedition and a few of its objectives. You will also gain insight into the KS Gamma Chapter and me. Finally, you will, in the (map) image above, see the routes traveled thus far.

A HUMBLE BEGINNING

Initially, I never intended this to be such a wild adventure. The idea to visit a few chapters arose when I decided to visit family in Raleigh, NC, for Christmas. Kansas Gamma had been encouraging its members to explore the Bent-O-Rama website (**see sidebar**

on page 42), so it was apparent that I should stop at the chapters along the way to (a) maintain our social media presence over winter break, and (b) ensure our members’ exposure to chapters around the country. I also figured that I’d investigate the schools with no listed Bent monuments to see what I could find.

FIRST DAY

If you’re wondering when the term Bentspedition came to be, I’ll tell you. I left Manhattan (Kansas, not New York) at 6:15 a.m. on December 17 and gassed up “Tortillo the Tacoma” at the Topeka rest stop on I-70 just as the sun was peeking over the horizon. It was light enough to make the first post on our chapter’s Instagram story; I pondered what to say.

In planning, I called it the “Great Kansas Gamma Bent-O-Rama Expedition of December 2023,” which didn’t exactly roll off the tongue. Hold up... Bent-O-Rama, expedition... the Bentspedition! Aha, on the side of I-70 in the middle of nowhere in Kansas, a new word was born! Then off to the KS Alpha, MO Delta, and MO Alpha Chapters I went.

I've met many wonderful people while traveling the country and the first was **Audrey P. Horner**, Missouri Alpha Chapter president at the University of Missouri (**Figure 1**). She and I met in St. Louis at Fitz's on Delmar. (Side note: I tried their key lime soda and it's incredible.) We visited the two chapters in St. Louis together, and she's a hidden Easter egg in the video taken at Washington Univ. (the MO Gamma Chapter). One can barely see her head peeking out behind a column as the camera pans around to their Bent. Together, we also experienced the first setback. The Bent monument at Missouri Epsilon (Saint Louis Univ.) was locked away inside their building; all I could see was its reflection off an interior window. How frustrating it was to be stopped, just inches short of their Bent! Partially defeated, I moved on from St. Louis, but the defeat didn't last long.

I had my first breakthrough at Southern Illinois University (SIU) in Carbondale. The IL Epsilon Chapter's Bent was the first unlisted monument that I found (**Figure 2**), and nothing will replace the satisfaction of that discovery. Let me paint a proper picture: it was below freezing with northerly wind gusts of up to 30 mph that night. I arrived just after 9:30 p.m., all alone but for the police officer watching me from across the street. Shaking in the icy wind, I snooped around for about 20 minutes. The SIU Applied Science Building looks like a 1980s architectural experiment, and I was most intrigued by the wacky structure. Less interesting was each passing minute in which I found no Bent. That's when I realized: maybe they don't have a Bent. Wait... maybe they do, and I just won't find it... Uh oh. Hope was quickly diminishing and the officer was finally circling around to confront me. That's when it happened. I found it! Excitedly, I snapped some photos, noted the Bent's coordinates, and updated KS Gamma with the great news. My flash photography combined with the miserable wind chill convinced the officer that the situation wasn't worth investigating, so with my first major victory accomplished, I pressed on towards Nashville, TN.

I pushed myself a little too far that first night, and I was lucky to make it to Nashville without falling asleep at the wheel. I arrived around 1:30 a.m., after leaving SIU at 10:00 p.m. I had planned to get a motel room, but it was way too late for that. I'll just sleep in the truck, I said. No big deal, right? Well, with no planning, it's harder than you might think to find a decent spot to park and sleep. Most places you'd like to sleep at don't allow overnight parking, and vice versa. I fueled up in midtown by Centennial Park and had zero energy to drive much further. After about 30 minutes, I found a dark and quiet spot on Parthenon Avenue just west of Oman Street. I'd never spent the night alone in a vehicle. It was terrifying and incredibly uncomfortable. I'm 6'3" and we are talking about an extended cab Tacoma with no pillows and one undersized throw blanket on an unusually cold and windy winter night.

Waking up drained from an effectively sleepless night, I was thankful to have made it through safely when the first light of day arrived the next morning. Aside from driving through the strongest crosswinds I've encountered, nothing too noteworthy happened the following day as I visited the Tennessee Beta, Eta, Zeta, Gamma, and Alabama Delta Chapters while en route to Knoxville. I don't typically drive through Huntsville and Chattanooga on the way from Nashville to Knoxville, but the scenery itself was worth the extra distance.

STUCK IN KNOXVILLE

On January 27, 1974, the KS Gamma Chapter of Tau Beta Pi was installed, and history was made when the Epsilon Chapter of Sigma Tau merged into KS Gamma immediately thereafter, in the first of such mergers. This year marks the 50th anniversary of the historic national merger. As we neared 2024, our chapter was excited to celebrate its 50th year at K-State, but that was dampened by our lack of historical knowledge. At some point, most of our records were unfortunately discarded. Furthermore, the chapter experienced a heavy turnover of advisors throughout the early 21st century. Because of these issues, we effectively



Figure 1: The Bent monument on the University of Missouri-Columbia campus.



Figure 2: The Bent monument on the Southern Illinois University (Carbondale) campus.

BENT-O-RAMA

Imagine an interactive map with which every Tau Beta Pi and Sigma Tau monument can be explored. "It'd be really great to have a website to share Bents and post where they are." That's what Neal T. Bussett, *CA X '09*, thought at a District 16 meeting in 2018. He and Paul H. Kimpel, *DE A '70*, then created the Bent-O-Rama website: bents.tbp.org

The website provides chapters with a proper place to share their history, photos of activities, goals, and information about their Bent monument(s) and/or Sigma Tau pyramid(s), if applicable.

It also allows individuals to log their personal visits and upload a picture at each monument. Much progress towards completion has been made since the site debuted in 2019, but it won't be fully useful until all chapters have entered the details of their Bents since Tau Bates can't log visits at icons with no information.

The KS Gamma Chapter would love to see a completed Bent-O-Rama map because it will be a useful tool in showing prospective members the grand scale of the professional network provided by Tau Beta Pi.

Figure 3: (below) A selfie taken with Executive Director Curt Gomulinski outside the TBPI Headquarters in Knoxville, TN.

Figure 4: (below/right) "Tortillo the Tacoma" also known as "Hotel Tacoma" refueling in Daytona, FL.



knew nothing about our past, and it's hard to celebrate 50 years of KS Gamma without knowledge of the chapter's history.

To rectify this issue, I emailed Tricia Gomulinski, Director of Alumni Affairs, a few weeks before leaving Kansas. First, I asked whether TBPI Headquarters (HQ) kept any permanent records for the chapters. They do. Then, I asked if it was possible for a chapter officer to comb through their chapter's records. It is. Knowing this, I asked if I could visit HQ (**Figure 3**) for a couple days to see what I could learn about our chapter. Before leaving Nashville, I let Tricia know that I'd be in Knoxville by the end of the day and that I'd be living out of my truck. However, Tricia and Curt graciously offered one of their guest rooms to me. That was much appreciated and no offense to *Hotel Tacoma* (**Figure 4**), but beds win over passenger seats.

I knew right away that the stay in Knoxville would be fruitful when I arrived at the Gomulinski's residence on December 18. Curt had a bound copy of *The Bent* magazines from the 1970s and flipped it open to show an article about Kansas Gamma's installation ceremony. Sure enough, there was our first president, **John R. Schlup, Ph.D., KS G '75**, standing next to the last president of the Epsilon Chapter, **John D. Wilson, KS G '74**, at K-State in 1974. I had no idea just how much information there was to come.

Two days quickly evaporated as I paged through every Sigma Tau *Pyramid* magazine from 1915-74 and every copy of *The Bent* magazine from 1973 onward. It was information overload. To my great surprise, HQ had records of all important chapter reports and correspondence from the present day all the way back to 1909!



Immediately, our chapter's origin story was transformed. We knew that the Epsilon Chapter was founded in 1912, but had no idea that K-State had tried to start the Kansas Alpha Chapter in 1909. Wow, just a few more Carnegie units in 1909 and KS Alpha would've lived at K-State! Then, in 1928, Kansas Beta was to be founded at K-State. Accreditation was no longer an issue and there was local support for a chapter, but the matter was dropped because of the Association's certain belief that the Sigma Tau merger of 1928 would be approved. There was, then, no reason to start a new chapter, they said, since our Epsilon Chapter would certainly be converted into a TBPI chapter that year.

I found original photographs of our installation ceremony and images and programs from the 1998 National Convention ("K-State in '98") hosted by KS Gamma. Curt surprised me with a flash drive containing PDFs of every handwritten KS Gamma catalog card. Also on his drive was every Sigma Tau catalog card in existence. Mind you, we have no idea when K-State lost its Sigma Tau records, so we may have a complete Epsilon membership record set for the first time in five decades. What truly blew me away though, was what I found under a tall stack of boring 1950s Sigma Tau financial records. Alone in its existence, an original hand bound March 1941 Epsilon Chapter pledge book from John M. St. John (**Figure 10, page 45**), a former mechanical engineering student at K-State.

Speaking of the Epsilon Chapter, I also aim to locate all surviving Sigma Tau monuments. Revealed to me in Knoxville were photographs of all those historic monuments across the U.S. I've since reached out to chapters across the country in search of any clues. My favorite Sigma Tau discoveries so far are at the WY Alpha and TX Gamma Chapters, where the bases of those chapters' Bent monuments were formed in the shape of a Sigma Tau pyramid.

It's tough to get strangers to take cold emails seriously; especially when asking about a monument that was probably destroyed 50 years ago. However, I did receive a response from Professor Emeritus **Raymond G. Jacquot, Ph.D., P.E., WYA '60**.

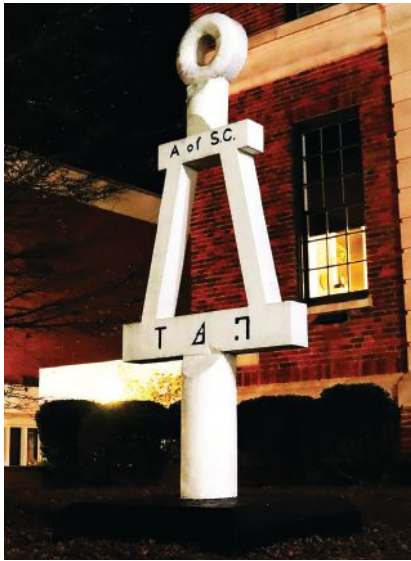


Figure 5: (left) The Bent monument on the Clemson University campus.

He seemed a bit skeptical of my inquiry at first. Through our exchange, I learned that he was a student member of Wyoming's Omega Chapter. I believe he would tell you that he was most surprised when I sent him a copy of his handwritten Sigma Tau catalog card from 1959. After that, we worked together and determined that Omega's pyramid was removed from its pedestal and replaced with a Bent monument in the late 1970s; that the base of their Bent was cast in the shape of a pyramid; and that affixed to it are the original 1932 plaques from the Omega pyramid. Therefore, WY Alpha has one of the newest Sigma Tau pyramids in existence.

TO CLEMSON AND BEYOND

After what seemed like a never-ending mountain of information, I finally moved on and continued the Bentspedition on December 22. The route took me directly through Gatlinburg and the Great Smoky Mountains National Park. Words don't convey how beautiful that drive is. Past the mountains, I found myself at Western Carolina Univ., home to the North Carolina Eta Chapter. They don't have a Bent yet, but by then I had picked up on the pattern of steel sculptures from the American Institute of Steel Construction scattered around American universities. Theirs appeared to be new.

Figure 6: (right) The original 1903 Sigma Tau Minutes Book with paperweights and keys.



I made it to South Carolina just after nightfall and worked my way through the hills to Clemson. SC Alpha's concrete Bent monument stands about 8 ft. tall and is elegantly painted white (Figure 5). Outside of Clemson, I stopped at a Walmart to buy a sleeping bag and some pillows. By Charlotte, I was ready to put them to use, so in a Cheddar's parking lot just off I-85, I got the best sleep I'd had in days.

Hotel Tacoma was now officially lavish.

The days leading up to Christmas were productive, as I visited chapters in North Carolina, with the second most ridiculous experience taking place at Virginia Tech (VA Beta) in Blacksburg. Due to the holiday season, every building there was locked. That didn't work very well, considering that their Bent marker was pinned inside a building. To make a long story short, I wound up spending over an hour finding a way inside and through a highly secured building just to discover, oh, this is the University President's office... Hmm... It's probably not in here. Eventually, thanks to an architectural clue in a photo from Curt, I found their Bent monument, which is actually located across the courtyard from that building. What a way to spend a morning!

ROUND TWO

The remaining chapters on the first leg went smoothly, and I got home just before New Year's, as expected. It didn't feel right though as there were still two weeks of break left, and so many listings were still incomplete. My restlessness took over and quickly I mapped out another leg and set off again on January 2. The first stop (44th chapter) was the NE Alpha Chapter at the University of Nebraska-Lincoln.

While at TBP HQ, I learned a great many things, including that Angie Boles makes the best sweet tea around. I also learned that NE Alpha has a large chest of old Sigma Tau stuff. Curt said he didn't have time to sort through all of it the last time he was there, but that there was probably some good stuff in it worth looking at. When I tell you he was onto something, I mean it! The NE Alpha Chapter president, **Rylie P. Steffen**, and I spent five hours reviewing every document in that chest and what we uncovered was profound. Curt had spoken of a long-lost Sigma Tau ritual. Rumor was that it was supposed to be passed down from Bob Nagel to Jim Froula to Curt, but Froula had no recollection of the ritual's existence. Ry and I located a 1965 printing of the Sigma Tau ritual handbook, which details multiple types of rituals, not just initiations. Curt was blown away by the finding and even more, we found the original record book (Fig. 6) containing minutes dating back to the first 1903 brainstorming meeting when the Sigma Tau founders met for the first time over a year before it was founded. The historical significance of our finds cannot be fully comprehended yet, but I look forward to learning more about Sigma Tau in the future.

Through the remaining days of the second leg, I visited both Iowa chapters, all five Wisconsin chapters, all of the remaining Illinois chapters, all but one Indiana chapter, and all Southern Ohio chapters, except for Ohio Eta (Air Force Institute of Technology). A word of advice: **READ** the Bent-O-Rama listings and make sure you phone ahead if a chapter is located on a military base. Ask me how I know. Let's just say I technically have one chapter left to visit in Dayton, Ohio.

The second leg was full of ups and downs. I fell in love with Chicago and am looking forward to returning this summer. During my stop at the Illinois Beta Chapter's Bent at Illinois Tech, I was thrilled to be back on solid ground because minutes earlier I was standing in a glass box hanging off the top floor of the Willis Tower. I'm not a huge fan of heights, so it was stressful. (Figure 7)

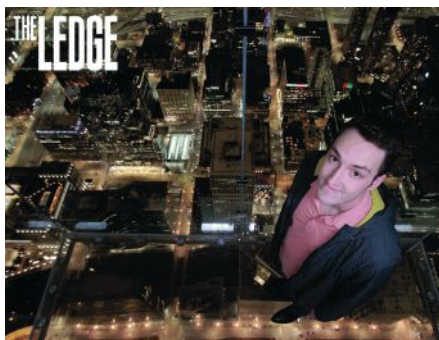


Figure 7: "The Ledge" glass box at the top of the Willis Tower in Chicago, IL.

One of my favorite encounters was with Jennie Klumpp, undergraduate advisor at the University of Wisconsin-Milwaukee (UWM). I was directed to her office while inquiring about the location of WI Gamma Chapter's Bent, and she didn't really know what I was referring to until I showed her a picture of another Bent monument. We then walked down to the main hallway where it hangs on the wall, and we had a conversation about Tau Beta Pi and the Bentspedition. Here are her thoughts on the exchange:

I have been an academic advisor in the College of Engineering & Applied Science at UWM for 24 years. So, of course, I have always had an awareness of Tau Beta Pi. However, it was not until Nick wandered into our office over winter break that I really gave the organization's Bent much consideration. In fact, when Nick said he was looking for it and wondered if I could lend an assist, I had to ask him what he meant when he said "Bent." I am embarrassed to say, I didn't know that the large bronze "thing" hanging in one of our main halls was a Bent.

I must say when Nick explained what he was doing, I was both shocked and impressed! And, as a mom, a little bit concerned. Traveling the country, living out of his truck to take pictures of the Bents spread throughout the country—that is true commitment.

As a result of meeting Nick and seeing his commitment to finding Bents on campuses across the country, as well as his commitment to Tau Beta Pi, I have a newfound appreciation for the organization and its impact on students.

Jennie has since located an informative plaque describing their Bent monument's dedication and she and other UWM employees are ensuring that it is hung near their monument, so everyone may understand what it represents.

There were a few other notable encounters on the second leg. I had the chance to talk with the chief advisor of the Ohio Xi Chapter at Miami University as well as the deans of engineering at both Bradley University (IL Delta) and the University of Illinois-Urbana Champaign (IL Alpha). There were some low points too. I spent the coldest night of the trip at the I-70 rest stop in Greenfield, OH. I was woken up by the cold that morning, after which I turned the truck on for warmth. That experience made me think about those who don't have that luxury. Then, later that morning, I got a flat tire on I-70 just before my exit in Richmond, Indiana. There's nothing like lying under your truck on the shoulder of the interstate as semis blow past you in both lanes.

ROUND THREE

Spring break was consumed by leg three of the Bentspedition, and I'm still amazed that I made it back to Kansas on time. I drove 5,000 miles through Texas, Louisiana, Mississippi, Alabama, Florida, Puerto Rico, Arkansas, and Missouri. It was a wonderful surprise to wind up at Texas Xi (UT Dallas) as they were hosting the District 10 Conference (Figure 9, page 45).

Kansas Gamma doesn't make it to D10 Conferences often, so I enjoyed meeting the people there very much and what an opportunity to ask all the chapters about their monuments. Walking into a situation like that is a Bent hunter's dream.

There were many highlights in the Southern states, but my favorite experience of all was visiting Puerto Rico Alpha on Pi Day. I had a contact there named Luis F. Torrens Sotomayor who has been an Engineering Futures



Figure 8: Nick (middle) in Puerto Rico during the PR Alpha Pi Day festivities. On the left is PR Alpha Chapter president, Yaleyry K. Garcia Rivera, and on the right vice president, Yaziel A. Rodríguez Suárez.

Facilitator for some time. He hosted our session at Kansas Gamma last fall and we really enjoyed having him, so it was a true pleasure getting to hang out with him for the morning. Also, their chapter was giving away pizza for Pi Day, and I enjoyed showing up unannounced as a random chapter officer from Kansas. They don't get very many visitors, which doesn't make much sense to me. Personally, I'm looking for any excuse to visit Puerto Rico again. (Figure 8)

CONCLUSION

The Bentspedition is the greatest adventure I have ever tackled. It has taken me to places I never would have gone; introduced me to people I never would have known; and broadened my horizons and helped me better understand the world we live in. Whether you're interested in pursuing a Bentspedition or not, it is my hope that this story will inspire you to set a goal and accomplish it despite all obstacles.

This summer, I will visit many other chapters in the Midwest and the Northeast. A video of every visit can be found on KS Gamma's Instagram story highlights. "BoR #1" contains videos from the first leg. "BoR #2" contains those from the second, and so forth. Our Instagram handle is [@ksutbp](#) (QR code available on page 45). Follow us if you'd like to tag along on this wild ride!

Bentspedition: Author Info and Additional Images

NICHOLAS R. DIVILBISS is a senior studying architectural engineering at Kansas State University. Next year, he will continue at K-State towards a master's degree in the same subject. Nick enjoys kayaking, singing, and litter cleanups. Growing up in foster care, after an abusive childhood, he didn't believe he could succeed in college. Before trying, he pursued a law enforcement career as a 911 dispatcher and a volunteer fireman, only to be told that his foster care background disqualified him from LEO positions. After selling real estate for a few years, Nick committed to going to college and doing whatever was required to be successful. Through much sacrifice, he's maintained a 4.0 GPA while gaining his first leadership experiences through Tau Beta Pi and for that reason, he's extremely grateful for TBI's role in both his personal and professional life.

More images will be posted to the Tau Beta Pi website at:
www.tbp.org/?Bentspedition

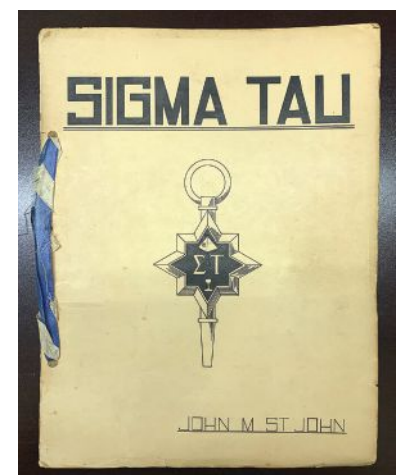


Follow along on Nick's journey using the QR code below.



(Above) Nick sitting on the Pyramid monument for the Sigma Chapter of Sigma Tau at Oklahoma State University.

(Below) Figure 9: Nick (far left) with the group of Tau Bate leaders in attendance at the District 10 Conference in Dallas, Texas.



Alumni Giving

Downing Club continued from page 27

CA ⊙	Piburn, Russell J. '75	FL B	Alvarez, Vicente '64		Drnevich, Raymond Francis '70
CA I	Sedlak Jr., William Lee '81	FL Γ	Anderson, John Lowell '81		Farrow, Michelle Dorice '83
	Bruce, Jack Edward '62		Benson, Gary Arthur '78		Flynn, Michael Joseph '89
	Dembegiotes, Pantele '84		Brookins, Thomas Michael '81		Galeziewski, Thomas Michael '78
CA K	Lee, Neil Yun-Liu '76		Chenkin, Joseph Alan '82		Springer, Denis Eugene '67
	Humphreys, Evan '75		Stagner, Ralph Scott '82		Yogan, Thomas James '82
	Moncsko, George Edward '68	FL Δ	Bradshaw, Robert Henry '77	IN Δ	McAlear, Hugh M. '64
	Takashima, Yuji '78	FL Z	DeLaurentis, Daniel Andrew '92		Olson, Stephen Robert '87
CA Λ	Fujitani, Paul Edward '79	GA A	Allen, Myron B. '58	IN E	Shefer, Ilan Gideon '77
	Hines, John Richard '73		Crawford, David William '61	IA A	Anders, Bryce Leroy '67
	Johnson, Lowell H. '65		Dixon, Daniel Benjamin '63		Bosshart, David John '80
	Verbrugge, John Allen '77		Faulkinberry, David Laws '77		Gaul, Alan David '83
CA M	Johnson, Bruce William '78		Flegal, William Malcolm '66		Johnson, David Charles '64
	Lee, Steven Yang-Sien '86		Lewis, J. Walter '69		Keene-Mason, Alice Fay '05
	Rodgers, Patrick James '80		Northington, Peyton Alexander '78		McGinnis, Bryan John '63
CA N	Armstrong, Lorrie A. '84		Priest, Anthony James '88		Olson, Scott E. '69
	Armstrong, Robert Allan '81		Tundermann, John Hayes '63		Rerucha, Thomas Lee '81
	Bishop, Doug Steven '73		Ware Jr., Clyde Lee '59		Rush, David Grant '85
	Harenberg, Donald Dean '61		Watts, David Lee '79	IA B	Roach, John Urban '78
	Harmeyer, Michael Allen '90		Yarbrough, David Wylie '60		Schaefer, Dean Allen '66
	Mayer, Robert James '85	GA B	Zimmerman, Clarence David '65		Warner, Diana Hix '73
	Michelson, Gregory J. '88	GA Δ	Jones, David Neal '92		Weber, Steven Wheeler '71
	Veit, Brian Richard '98	IL A	McCullough, Garrett Trevor '23	KS A	Benso, William Eldon '59
CA Ξ	Doeing, Brian James '81		Allen, Charles Humphrey '66	KS B	Bradley, Richard Leland '59
	Patterson, Richard Harold '74		Baumgartner, Richard Albert '69		Hockett, James Keith '66
CA P	Alexander, Dean Lee '80		Benzinger, Leonora Ann '86		Jaeger, Robert Gene '70
	Costello, Vincent J. '08		Clark, Elliot Andrew '83		Straka, James Lavern '89
	Mandrell, Nathan Keith '92		Kasik, Phillip Mark '68	KS Γ	George, Darin Lynn '86
	Markarian, Thomas Franklyn '95		Lanzerotti, Louis John '60	KY A	Lebak, James Michael '89
	Motogawa, Bruce Joji '75		Le Blond, Peter Carl '75		Blevins, Parker Ray '64
CA T	Lee, Chin C. '70		Lenzini, Peter Arnold '75		Congleton, Stephen Douglas '79
	Lotocky, Daniel A. '84		Resman, Tom A. '84		Cook, Robert Henry '74
CA Ψ	Dawson, Carole Jeanne '85		Rosenthal, Mark Alan '81		Freeman, Richard Edwin '73
CO A	Benjes III, Skip Henry Herman '87		Sorenson, Gregory Erik '03		Gardner, Timothy Alan '75
	Cochran, Noelle Renee '86		Splitt, Frank George '52	KY B	Midkiff Jr., Kenneth Clark '79
	Devoe, Tracie Kay '82		Szumski, Daniel Raymond '80		Hughes, Earl Christopher '76
	Trembly, Steven Alan '93		Tonelli, Arthur Duane '57	LA A	Jodrie, Mary Clare '85
	Wilson, Donald Earle '58	IL B	Vogel, Frederick M. '80		Armistead, William T. '71
CO B	Cormack, Christopher Watson '82		McBlaine, Michael Richard '75	LA B	Champagne, Sidney Alfred '68
	Herhold, Mark Kenneth '80		Thomas, Robert James '82		Knighten, James Leo '65
	Luppens, John Christian '76		Ziomek, Arkadiusz '10		Bourgeois, Brian Steven '82
CT A	Cooper, Richard Craig '63	IL Γ	Henry, Thomas Peter '73		Bourgeois, Edit J. '91
	King III, C. Judson '56		Miner, Warren Philip '59		Heausler, Thomas Folse '81
	Kucera, Daniel Jerome '61	IL Δ	Witt, Frank A. '55	LA Γ	Marin, Justo Enrique '79
CT B	Fappiano, Michael D. '87	IL E	Toon, James Bertram '87		Caruthers, Shelton DeWitt '89
	Grossman, Richard Larry '69	IN A	Sheehan, Patrick Joseph '85		Cochran, Gregory George '81
	Kane, Martin Paul '86		Alexander, John Albert '56		Jenkins, James S. '80
	Sobol III, Anthony Joseph '70		Bertsch, Patricia Babette '76		Owen, Mark Enos '92
	Srebnick, David Lee '78		Bower, William Walter '67	LA Δ	Thomas, Robin Carol '92
CT Γ	Boccia, Chris-Michael '97		Clodfelter, Donald Glen '55		Barbay, Norman John '74
	Godbout, Louis Francis '72		Corns, Joseph Benjamin '52		Halkiades, George '63
DE A	Cercy, Michael James '81		Cross, Perry Gregory '74	ME A	Key, John Autry '75
	Keyser, Kevin Justin '88		Edwards, Deborah Jane '85		Ouellette, Alfred David '76
	Packard, Lawrence Bruce '88		Eykamp, G. Richard '56	MD A	Welch, Peter James '72
DC A	Wimberly, Mark Oliver '77		Fenwick, Bob B. '58		Capecchi, Dennis W. '79
DC B	Delgado, Tony J. '93		Frazier, George E. '57		Gitomer, Steve Joel '64
	Gaffney, Joseph M. '83		Hendryx, Kevin Scott '81		Gormley, Paul Edward '68
	Roberts, Carol Ann '63		Jebsen, Eric Richard '80		Hartlove Jr., Charles L. '76
DC Γ	Grassel, Herbert Hans '77		Lee, Robert Edward '67		Kutcher Jr., John F. '86
	Joyce, James Wallace '61		Levine, Jerrold Louis '61		Kutcher, Susan Lynn '89
	Mitchell, Reginald Stuart '65		Montgomery, Stephen Tedford '71		Lang, John Charles '72
	Wilhelm, Eugene Bailey '86		Mosier Jr., Andrew C. '78		Linaweaver, Pierce '55
FL A	Behar, Robert Jose '75		Mucha, Thomas Jerome '60		Lu, Stanley '95
	Frazier, Lori Marie '77		Peak, Steve Charles '72	MD B	Piedrafitra, James L. '78
	Garmizo, David W. '89		Sosnay, Richard Gordon '66		Amtmann, Louis Gerard '66
	Giolma, J. Paul '69		Tveter, Steven Elliot '74		Brownstein, Barry Jay '68
	Glass, John Dorrance '73		Warren, Scot William '83		Deschere, David Stewart '82
	Gunter, Alan Dale '79	IN B	Wright, Ronald Robert '71		Galloway Jr., John Perrin '73
	Knapp, Paul Edward '77		Martin, Jeffrey V. '78		Iacangelo, Gerard Felix '80
	Mennes, C. Martin '68		Marum, Steven Edward '73		Kanofsky, Hal Steven '70
	Milburn, David M. '91		Nichelson, Nick Michael '84		Leasure Jr., William August '66
	Vande Vusse Jr., Gerald '65		Osburn, Richard Kimmell '67		Marks, Richard William '70
	Vande Walle, Robert John '72	IN Γ	Schipper, Michael Joseph '82		Poulter, Harry David '88
	Woodward, Michael Boyd '85		Bajura, Richard Albert '62		Roberts, Victor David '64
			Colleran, William Thomas '83		Roth, W. Clint '78



Clarke Club
Ethan M. Idenmill
 CA Y '04

I'm proud to support engineering education – the key to the future.



Evans Club
Rick O. Ayres
 IL Γ '79

Donations to TBI support engineers whose skills in problem solving & innovation are greatly needed.

Downing Club continued

- MD Γ** Stewart, Larry Edwin '60
Yourshaw, Sheryl Lynn '99
Dickson, Brien Wayne '93
Hauge, Todd Allen '83
Quint, John H. '84
Surina Jr., John Joseph '86
- MD Δ** Iannuzzi, Jo '96
- MA A** Achilles, Heather Dale '83
Ahern, Michael Francis '78
Andel, Robert Matthew '73
Auclair, Jared Robert '01
De Andrea, Paul John '75
Griffith, Rebecca Anne '91
Haringa, Glenn E. '74
Steinka, Bradford Roland '81
Wright, Neal Timothy '76
- MA B** Balazs, Phillip Terry '69
Ball, Norman Addison '60
Bishop, Peter B. '70
Greene, David Lockwood '68
Lawes, Charles Peter '58
Manganaro, James Lawrence '61
Shinko, Martin Stanley '72
Slifka, Richard Barry '61
Smith, Kenneth Alan '58
Vlahakes, Gus John '71
Weinberg, Marc Steven '70
Wrinn, Joseph Francis '75
- MA Δ** Anderson, Thomas Theodore '57
Babaian, Peter Martin '99
Bloch, Frederick Hersh '68
Curless, Richard Walter '66
Day, Anthony Frank '65
Hildebrandt, Eric Michael '92
Milauskas, Ronald Joseph '62
Russell, Jack Hesselstine '54
Savage, Paul David '77
- MA E** Calvo, Alberto Bruno '70
Loto, Thomas Anthony '93
Présumé, Hantz Antony '89
Vesce, Paul James '64
- MA Z** Beliveau, Thomas Joseph '69
Benwood, Bruce Robert '69
Ewell, Kenneth Albert '68
Philbrook, T. Varnum '73
Rainville, Bob Francis '68
- MA H** Daniels, Susan Carol '81
- MA Θ** Allen, Karen Leonard '89
Burns, Nancy E. '84
Hertel, Mark Douglas '86
- MI A** Beck, Maureen E. '03
Cameron, John Howard '68
Chaffee, Stanley Wendell '74
Gidner, Richard V. '53
Regenstreif, Joyce '78
Suszko, Andrew M. '73
Watanabe, Gerry Torao '72
- MI B** Bekins, Randy Lee '80
Bentley, James Herbert '57
Dejonge, Michael Kent '65
Korpi, Mary Beth '76
Kranz, Paul Richard '63
Mattson, James Arthur '70
Pelletier, Douglas Peter '89
Rom, David Bruce '56
Sauer, Dan Michael '05
Stehulak, Edward Stephen '86
Whitman, Brian Edward '92
- MI Γ** Blair, David John '57
Brown, Marshall Joel '96
Campbell, John Alexander '62
Capelli, Ronald B. '73
Carpenter, David Robert '08
Davis, Robert Allan '81
Fertel, Howard Kevin '79

- Hansen, Peter Ernest '61
Lambert, Thomas Joffre '77
Leeds, Thomas Murray '85
Macika, Raymond Edward '86
Maugh, Roger Edward '55
Miller, Carol Jean '79
Miller, Stephen Scott '78
Nobunaga, Alan Shizuo '83
Othman, Roger Mohamad '74
Rhines, Walden Clark '68
Rigge, Lawrence Allen '83
Snyder, Robert Joseph '77
Wingard, Joseph '80
Winter, Steven D. '81
Zechel, Gary Michael '62
- MI Δ** Conti, Mark '76
Dolan, William John '62
Elward, Bob M. '75
Gallagher, James Anthony '68
Kaunelis, Pranciskus Saulius '69
Schalk, Eugene N. '55
- MI E** Capraro, Michael A. '70
Hill-Stramsak, Colleen Lynn '00
Mertz Jr., Harold J. '61
- MI Z** Foraker Jr., David Ernest '58
Gillham, Gregory V. '83
Haines, John Gregory '72
Reardon, Robert Warren '74
Roth, Maureen Lynn '91
- MI H** Nelson, David Arthur '85
Stramsak, Steven A. '01
- MI Θ** Messer, Bryan James '98
Spall, Jim Charles '79
- MI K** Seymour Jr., Richard L. '97
Sikkenga, Chad Douglas '98
- MN A** Christensen, Tom Michael '79
Halladay, Henry Earnest '64
Hegna, Harwood Allan '69
Loughlin, James Paul '85
Maus, Brian Wayne '81
Mortenson, Robert Lee '64
O'Leary, Stephen Holmes '69
Osen, John Walter '81
Schwartz, Gary Lynn '73
- MS A** Backus, Alan O. '78
Backus, Patricia Michel '78
Bui, Tuan Thanh '90
Clements, Nathan Scott '96
Hotard, Daniel Gerard '76
Seitz, Thomas Bingham '63
Wachs, John Jay '71
- MS B** Simmons, Mary Ann '85
- MO A** Adams, Charles Ray '65
Brownfield, David Lee '68
Fairbanks, Robert William '62
Gardner, Roger William '63
Hea, James Peter '68
Kuehnle, Charles George '62
Sprouse, Loren V. '73
- MO B** Bodenhamer, Steven D. '75
Brockhaus, Douglas Adolph '68
Buenemann Jr., Morris C. F. '82
Hendrickson, Richard Charles '53
Kyser, Dale Anthony '83
Leitterman, Dennis W. '76
McJimsey, Edward Clair '71
Myers, Kenneth Raymond '72
Pannone, Gregory Michael '82
Scherrer, Paul Keith '71
Schwent, Dale Gerard '84
Willoughby, Ronald D. '73
Fisher, John William '56
Goldring, Stanley '64
- MO Γ** Lingren, Terry Dale '80

- Standridge, Charles Robert '75
Sullivan, Gregory Alan '81
Kolb, Robert C. '61
- MT A** Montgomery III, Wayne W. '83
- MT B** Claar, Stephen Beryl '73
- NE A** Cowling, Edgar Charles '75
Matthews, Deborah Jo '82
Shanmugam, Alagappan '83
Sneed, Kathryn K. '80
Van Skiver, Max Alan '75
- NV A** Ericksen, Spencer Lee '99
Jones, Keith Alan '85
- NH A** Amazeen, Bruce Edward '65
Major, Alfred Napoleon '50
Qualters, Kevin Robert '85
- NJ A** Allen, Samuel Miller '70
Meyer, Alfred P. '60
Rizzo, Robert Philip '70
Swanson, Frederick James '68
Turgyan, Terrence Joseph '75
Colarusso Jr., Remo John '83
McCord, William Fred '64
Nixon, Allen Mackenzie '62
Richards, John Reed '76
Shelestak, Larry J. '75
Starr, James W. '73
- NJ Γ** Andrus, James '02
Balma, Peter Michael '75
DeWaal, Johannes '70
Furtado, Victor Cunha '58
Gittes, Marvin Steven '63
Gupta, Punit Kumar '96
McWilliams, John Paul '65
Moeller, Peter Allan '78
Otterbein, Richard Charles '71
Puhan, Robert '75
Spinnler, Gerard Francis '75
Tabor, Vincent Joseph '75
Vandemeulebroeke, Leon C. '89
Zierau, Siegfried Max '61
Zygo, John Peter '70
- NJ Δ** Bennett, Karl Edward '76
Rafieyan, Kamran Lee '89
Whitesides Jr., Lawson Ewing '68
Wise, Frank W. '80
- NM A** Aragon, Frank Garcia '77
Bradt, David Jay '81
- NM B** Gonzales, Michael Anthony '74
Salas, Thomas M. '85
Zich, Jon H. '80
- NY A** Chaudhry, Sohail S. '74
Epling Jr., William Young '83
Morgan, Thomas Arthur '78
Seader, David '67
- NY B** Baleno, Anthony Paul '66
Bickley, Thomas Duane '78
Demyanovich, Sara Elizabeth '85
Ragonese, Louis John '56
Tobin, Michael R. '87
- NY Γ** Bazinet, Chris Gerald '79
Bergenthal, Jon Francis '75
Capek, Thomas George '86
Dowgwillo, Robert Michael '75
Dupier, Dennis George '61
Goldschmidt, David Joel '91
Lewandowski, Michael '96
McCormick, Peter Elliott '80
Mucher, Craig Allen '82
Natale, Michael Robert '02
Schrier, Steven Brett '82
Segal, Joshua L. '68
Veldman, John Peter '70
Walter, Buff Arthur '60
Zmroczek, Lee Anthony '78

Alumni Giving

FEBRUARY 1 — APRIL 30, 2024

Downing Club continued from page 47

NY Δ	Frantz Jr., Rolf A. '66 Frederick, Thomas Robert '87 Goldstein, Steven Mark '81 Heineman, Duane Thayer '58 Humphrey, John Morgan '67 Hurta Jr., Gary Paul '06 Kuehne, Don L. '73 Logan, Joseph Skinner '56 Reth, Thomas Bernard '64 Schwenker, David William '67 Van Arsdale, George Davis '62	ND B	Dehen Jr., James John '80		Kankelborg, Carol C. '86
NY E	Barto, Thomas Peter '70 Brodsky, Wesley G. '71 Feldman, Robert E. '59 Niebanck, Charles F. '54	OH A	Bracy, Kevin Norman '93 Cares, William Ronald '63 Cross, Matt David '05 Diederich, Norman Francis '64 Drier, Delmar Waldemar '52 Hoh, Ka-Pi '84 Holcomb, J. Eric '82 Moorhead, Kenneth Wayne '50 Oblak, John Michael '62 Oravec, Joan Marie '71 Richenbacher, Wayne Edward '75 Smialek, Jim L. '68 Tomasch, Walter John '52 Allspach, Eugene Robert '70 Dobashi, Harry Hideo '68 Lockard, Chad William '01 Mayer, Robert Lawrence '69 McCune, Larry Clinton '63 Carr, Stephen J. '70 Case, William Frederick '64 Edwards, Randy Randall '71 Heath, J. Allen '78 Hohman, Charles Maurice '67 Johnston Jr., Robert Paul '67 Kinzel, Evelyn Kay '69 March, Michael Ross '85 Mohr, John Glover '63 Riedel, Nelson Andrew '67 Risch, Gary Allan '76 Schroeder, Michael Alex '95 Shade Jr., W. Norm '70 Shepherd, John McBride '58 Stumbaugh, Gary Allen '66 Pflaumer, Robert Glen '67 Derkaschenko, Alex '74 Busbey, Bruce C. '84 Dembrow, David Alan '82 Rober, Kenneth Jerome '68 Clarke III, DeFrance '81 Gilbert, John Ellis '70 Hartman, Dean H. '99 Jumper Jr., George Yount '66 Miller, William Gilbert '83 Palazotto, Anthony Nicholas '55 Decker, John William '65 Evanzia, Gregorio Patrick '64 Kamowski, Dennis Daniel '73 Kramer, Lawrence Joseph '62 Mikalauskas, George Anthony '86 Simpson, Gerald Francis '68 Uleman, Robert T. '71 Walsh, Michael Anthony '75 Bennett, Dan A. '73 Walker, David W. '72 Brattoli, Mark A. '79 Carver, Robert Michael '87 Dudek, Scott Andrew '90 Stimler, Jeff Joseph '84 Wielopolski, Richard John '76 Hallochak, Andrew John '77 Stiver, Alan Wayne '86 Suhar, Richard Allen '83 Hill, Leah Beth '10 Burton, Donald O'Neil '71 Dotson, Neil A. '84 Duke, Chris '83 Norris, Thomas Gilbert '56 Sherrill, Shirley Whitmore '82 Weston, Kenneth Clayton '55 Dean, Philip Maxwell '74 Hanes, Larry Lewis '76 Sneed Jr., Elbert Lee '79 Loughmiller, Bert Edward '64 Miller, Mark Wade '89 Shaw, Jim Walter '70 Heffernan, Robert Booth '70		Melvin, William Larkin '89 O'Hara, John James '73 Pondo, Fredric '75 Roach, John Steven '61
NY Z	Gersten, Marvin Charles '60 Kaczmarek, Richard '73	OH B		PA B	Andrichak, Stephen Michael '58 Bova, Francesco Antonio '05 Bradt, Andrew '76 Carretti, Katherine Grace '84 Gasda, David Charles '70 Gibson, John Parke '64 Kardos, John Louis '61 Matthias, Tracey Dawn '89 Meador, Erik John '90 Pickenheim, Timothy Ronald '90 Wanenchak, Michael J. '69 Wilt, Kenneth Douglas '84
NY H	Welk, William '79	OH C		PA Γ	De Paul, Louis Anthony '73 Dvorsky, James Eric '81 Madine, Gary Edward '82 Riedel, Frederick William '68 Sack, John Stuart '75 Baxley, John Hirst '88 Black, David L. '83 Hoffer, Norman K A '81 Nackoney, Ogden G. '63
NY Θ	Baldwin, Alan Richard '70 Dec, Eugene Bernard '72 Grubb, Mike Alan '78 Harris, Everette C. '76 McKenney, John Lee '62 Newman, Mitchell James '81 Thomas, John Anthony '86	OH D		PA E	Hagadorn, Hubert William '59 Matsumoto, Tadashi Campbell '60 Stephens, David G. '59 Wetzel, Ed Donald '74
NY I	Andrews, Richard Francis '79 Cassella, Judith Ann '71 De Fazio, Michael Joseph '67 Levy, Rami C. '92 Schwartz, Richard '57 Teitelbaum, Howard Allan '79	OH E		PA Z	Browne, Joseph Dominic '60 Hunt, Thomas Robert '84 Mergel, Joseph John '72 Shaffer, David Eugene '78 Silvasi, John J. '70
NY K	Curtis, Johnson Ottawa '66 Hajim, Ed '58 Muller-Girard Jr., Otto '89 Saucke, Alfred William '60 Singer, Bart Alan '82	OH F		PA H	Keil, Alan James '72
NY Λ	Cilento, Eugene Vito '73 Knights, David Alexander '86 Madia, Michael '81 Novakoff, Alan K. '74	OH G		PA Θ	Zimmerman Jr., Carle Clark '56 Braun, James Francis '84 Coyle, Todd Frederick '77 Dever, Patrick Brian '94 Gallen, Robert Michael '64 Girondo, Dominic Peter '70 Norris, Clinton Joseph '61 Orsatti, Louis George '66 Salvo, John P. '56
NY M	Hurewitz, David Lewis '64 Montgomery, Michael Earl '75 Willis, Michael James '82	OH H		PA Δ	Anselm, Gregory Alan '81 Fitzpatrick, Anthony Ryan '03 Hovanec, Andrew Stephen '58 Mozelewski, Stephen Francis '86 Musselman, Thomas Andrew '73 Taylor, Thomas Ray '73 Tjader, William Stephen '79 Biddle, Justin Miller '56 Foster, Nigel John '81 Byers, Tom L. '86 Kolb, Robert Allen '66 Oliva, Stephen Arthur '67 Silva, Ronald Ernest '74
NY N	Barnes, Robert Edward '84 Davis, James Steven '70 Feldman, Scott '75 Humphrey, David Kenneth '67 Kocher, Lawrence Harold '67 MacNeil, Randall Lewis '69 Pardini, Thomas John '77	OH I		RI A	Hunter, James Richard '85 Mims Jr., Paul Wilson '71 Moose, Thomas Caswell '72 Prothro, Joseph E. '63 Rast Jr., Heber Edward '63 Speed, Penelope Ann '87
NY Ξ	Byrnes, Richard Dennis '83 Defelice, Nicholas James '77 Machuca, Luis Arthur '69 Mohan, Anne Elizabeth '09 Snyder, William Joseph '81 Taylor, Maryanne Barbara '80	OH J		RI B	Haggerty, N. Kent '72 Lang, Christine Marie '80
NY O	Doynow, Donald '75 Jahelka, Joseph Robert '76 Jankowski, Cecelia '81 Kadysiewski, Stephen Joseph '76 Ribuffo, Peter Vincent '79	OH K		SC A	Cochrane, Jerry Wilson '55 Gooley, Thomas Joseph '55 Gustafson, Richard Alexander '63 Kelly, Robert Thomas '86 Pastrick, Hal Lee '58
NY Π	Grosch, David A. '85	OH L		SD A	Brass, Lorin Lee '75 Eisenbraun, Daniel Dale '75 Kroetch, Christopher Allen '06 Massie, Larry Wayne '82
NY P	Turner, Clayton Phillip '90	OH M			
NY Q	Lau, Soon '85 Wong, Wai Kin '85	OK A			
NC A	Alexander, Ralph Bell '76 Allen, William Dowell '88 Capps, Dickson Michael '75 Cutchin IV, James McKenney '62 Doggett, William Ray '86 Shelton, Monty Lee '84 Teague, Lisa Jones '81 Younts III, William Ernest '79	OK B			
NC B	Behnken, Kenneth Charles '67	OK Γ			
NC C	Green, Regina Whittaker '79	OR A			
ND A	Dahlin, Earl Charles '58	PA A			

Continues on page 52.

Summer Problems *Continued*

4: ... the types of other citizens. Unfortunately, it is not possible (for me, a non-citizen) to distinguish one type from another. On a recent visit, I was assisted by two citizen tour guides. We stopped at the Sports Stadium to witness the finals of the Atlatl Cup. Each guide asserted that the other was a Gray, but whether either of these statements was true, I had no way to ascertain at the time. The three winners were said by one guide to be (in order of finishing) a Green, a Gray, and a Red; but by the other guide to be a Red, a Green, and a Gray. (That is, each guide made four consecutive statements.) Which type(s) were the two guides and the three winners (in order)?

—*My Best Puzzles in Logic and Reasoning* by Hubert Phillips

5: Rotated Numbers

Harry works for the insurance firm of Smallprint, Wriggle, and Payless. In SW&P, every policy number (including those starting with leading zeros) has the same number of digits, which is fewer than 20. One day he was handed a list containing the numbers of five policies he was to review. He was surprised to note that the value of each number after the first on the list was exactly twice that of the number above it.

Furthermore, it could be obtained from the number above it by moving the last (unit) digit of that number to the front of the number. What was the last number on the list (please use ',' every three digits)?

—An Enigma by Peter Morris in *New Scientist*

BONUS: Fill in the following table. N is the number of one-ohm resistors available. $f(N)$ is the number of different resistances that can be formed by wiring exactly N resistors in various arrangements (series, parallel, bridge, ...). $g(N)$ is the number of different resistances that can be formed by wiring one up to and including N resistors in various arrangements. In all arrangements, there are no dangling resistors (open circuit), e.g., wye with one end not attached; and no short circuits (in parallel with resistors).

N	1	2	3	4	5	6
$f(N)$	1	2	4			
$g(N)$	1	3	7			

— F.J. Tydeman, CA Δ '73

COMPUTER BONUS:

The function $d(n)$ is defined as the number of divisors of n , including 1 and n . For example, $d(12) = 6$, since the divisors of 12 are 1, 2, 3,

4, 6, and 12. Two integers for which $n \cdot d(n)$ has the same value are 18 and 27 ($18 \times 6 = 108$; $27 \times 4 = 108$). Find the smallest three integers such that $n \cdot d(n)$ has the same value for all.

—*Prime Numbers, the Most Mysterious Figures in Math* by David Wells

Email your answers (plain text only) to any or all of the Summer Brain Ticklers to BrainTicklers@tbp.org or by postal mail to **Dylan Lane, Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697.**

The method of solution is not necessary and the Computer Bonus is not graded. Where possible, exact answers are preferable to approximations. The cutoff date for entries to the Summer column is the appearance of the Fall *Bent* which typically arrives in mid-September (the digital distribution is several days earlier). We welcome any interesting problems that might be suitable for the column. Dylan will forward your entries to the judges who are

J.C. Rasbold, OH A '83

J.R. Stribling, CA A '92;

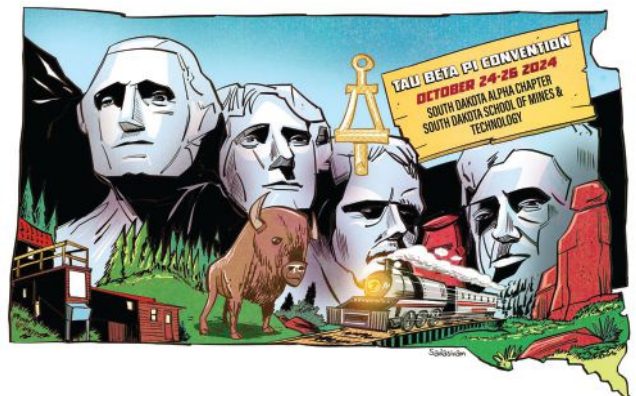
K.D. Berthold, TX B '04; and the columnist for this issue,

— F.J. Tydeman, CA Δ '73

JOIN US FOR THE 2024 CONVENTION IN RAPID CITY, SOUTH DAKOTA

- **October 24-26 at The Monument**
- **Hosted by the South Dakota Alpha Chapter at the South Dakota School of Mines & Technology.**

More information is available at: www.tbp.org/convention.cfm or, contact tbp.convention@tbp.org, with any questions.



ASSOCIATION BRIEFS

TAU BETA PI DAY 2024 RECAP

We greatly appreciate the participation of Tau Bates, including our alumni and collegiate chapters for organizing this year's Pi Day events. Thank you to those who submitted images, some of which have been posted to our social media channels. Check them out at www.tbp.org/?PiDay24

In conjunction with TBPI *Pi Day*, our Giving Campaign raised more than \$11,300 to help fund TBPI programs that benefit the future of engineering.

Four TBPI *Pi Day* images, including short summaries, appear below.

Top Left: OH Eta Chapter members at the Air Force Institute of Technology giving out pies to celebrate. Image courtesy of **Major Dave C. Pert, USAF, OH H '24**, a nuclear engineering graduate and previous OH Eta Chapter vice president.

Bottom Left: New York City Alumni Chapter members at Tappo NYC Thin Crust Pizza.

Top Right: **A.D. Cropper, Ph.D., DC A '84**, with the Bent monument on the Howard University campus.

Bottom Right: **Todd M. Loiselle, FL A '88**, and **Dan A. Masnada, CA Z '75**, on a snowcat ski outing in the California Eastern Sierras. They ride the snow together despite attending schools on opposite coasts and having different engineering degrees. Even more astounding is that Todd is a snowboarder and Dan a skier.



THE MYSTERIOUS (LONG ISLAND, NY) BENT SAGA, PART 2

In the Spring 2024 issue, we shared the story of a Bent monument of unknown origin that non-member John Freijo found in the yard of his home. TBII Headquarters reached out to several collegiate chapters, but no one knew of any missing Bent monument. We then reached out to **Sandhiya Kannan, NYO '17**, who is a NY Omicron Advisor, District 2 Director, and the closest Association Official with ties to Long Island. She has provided the following update on the saga.

First, she drove to Shirley (NY) and met John to pick up the Bent in question. He was happy to hear that the Bent may have a new home.

Next, she drove the Bent to Stony Brook University, where she attended the NY Omicron's Spring Initiation. Stony Brook is geographically closest to where the Bent was found; however, they already have a monument.

With the suggestion from **Jackie O. Yang**, NY Alpha Chapter president, she took the Bent to its planned new home at Columbia University. Her 300-mile journey took 7 hours of drive time,

including extra stops. She also visited both of her alma maters on the trip (Stony Brook & Columbia).

Ms. Yang is now working with her chapter advisor and Columbia's administration to order a new stem, plaque, and base for the monument, so it can be installed in the Mudd Engineering Building. Stay tuned for the conclusion of the Mysterious Bent monument as it is officially installed.



Sandhiya, the mysterious Bent monument, and Mr. Freijo.

WELCOME NEW DISTRICT DIRECTORS



District 2
John F. Moore
NY II '88



District 3
Linda K. Kordi
NJ I '02



District 3
Matteo Sanchez-Dahl
DC I '23



District 7
J. Brock Stephan
SC A '19



District 9
Christian D. Branch
OK I '23



District 10
Aviroop Majumdar
PA Z '23



District 12
Kyle M. Barton
UT I '04

Alumni Giving

FEBRUARY 1 — APRIL 30, 2024

Downing Club continued from page 48

TN A Burnett, William Allen '71
Cashion, Greg Lee '79
Davis, Wayne Thomas '73
Evans, Colby Russell '94
Meriwether, George H. '74
Moore, Terry M. '67
O'Bryan, Lynda Kathleen '62
Sarnaik, Jagadishchandra '81
Sewell, John Ike '54
Taylor, David Richard '69
Totten, Barry Nelson '82

TN B
TN Γ Zabriskie, Kenneth Andrew '80
Moyers, Robert Lewis '05
Thompson Jr., W. William '68

TN Δ Halsema, Paul Bernard '81
Luttmann, Lisa M. '82
Luttmann, Mark Joseph '82

TX A Crippen, Robert L. '60
Dodge, Nathan B. '68
Hurst, Terry Lee '76
Kassler, Harlan Larry '91
Kopecky, Johnny Anthony '65
Nix Jr., Cecil Anson '57
Peet, Ed '69
Seaman, George Cook '65
Setliff, Sanford Ray '69
Whitesides Jr., John Lindsey '65

TX B Jain, Ravinder K. '71
Marasco, David Foster '87
Moss, Michael William '83
Upchurch, James Alan '76

TX Γ Cox, Bill E. '76
Fisher, John David '70
Horn, Kenneth Porter '61
Larkins, Robert Pruett '56
Mohr, David Norman '72
Wolfgram Jr., Bob Robert '68

TX Δ Balusek, David Kiser '82
Boutte, Jennifer Lynne '89
Brittan, Charles Laury '65
Embry, Dale Lee '77
Eng, Ronald Wey '71
Johnson, Vance Clay '78

Linn, William Ray '81
McClellan III, W. Roy '74
McCord, Jimmy Delwyn '70
Murthy, Prahlad N. '92
Porter Jr., James Walter '51
Stratton Jr., Jerald Jay '86
Herrmann, Edwin Peter '67
Valka, William Allen '75

TX E
TX Z Broussard, Lance Armanca '97
McCaleb, Earl '64

TX H Benson, Marvin Dale '79
McBay, Michael Raymond '73
Schaeper, Wilfred H. '76
Tepper, John C. '82
Totten, Dwight Lee '66
Williams, Larry Donal '80
Goolsby, Tommy D. W. '84
Daniels, Jerry D. '79
Jolley, Lawyer Curtis '79
Carter, Jason Oliver '87
Carter, Norhanani B. '87
Coon, John W. '91

TX Θ
TX K Lamph, Jane Ann '80
Reinertsen, John O. '79

TX Λ Paxton, Thornton Shirrel '63
Thompson, James Rowley '76
Bouchard, Donald Raoul '81
Clark, David Thomas '81
Melzar, Jonathan Preston '85
Barrell, Charles Davidson '70
Conway Jr., George Franklyn '70
Mac Glashan, Donald Welton '57
Price, Michael Glendon '74
Epperly, William Robert '56
Mann, Richard '75
Michelson, Darlene Sue '86
Smith Jr., Sidney Crawley '63
Mahaney, Jack Morris '82
Sturm, Carroll Clark '78
Brewer, Brian J. '82
Chandler, Alan Scott '77
Kreidler, William Mark '74
Larkin, Robert Semple '61

UT A
UT B
VT A
VT B
VA A
VA B
VA Γ
WA A

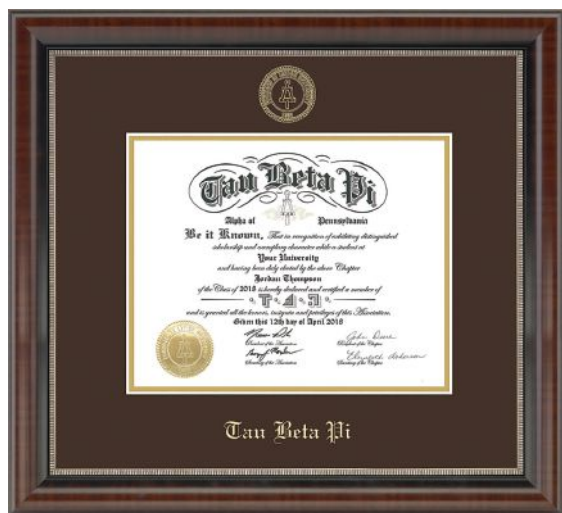
Levin, Marc E. '80
Matteson, James Harris '66
Rosen, Donald George '58
Schwam, Susan Elaine '88
Stiegler, Joe Edward '58
Strickland, Elizabeth Ann '77
Anderson, Kyle Joseph '03
Groat, J. Everett '94
Hartup Jr., John Dewey '50
Turi, Michael Allen '07

WA B Burton, Brian Carver '97
Campion, Paula JoAnne '00
Amrhein-Cain, Wendy Ann '94
Berry, David Kyle '73
Boggs, Mark Steven '80
Lilly, Larry Joe '64
Schuler, Arthur Kurt '71
Skujins, Margaret Stuart '69
Skujins, Ojars '68
Spence, Peter Larkin '80
Bennett, Chris John '06

WA Δ
WV A Aumock, Nathan Michael '03
Buehring, William Arthur '67
Hoffman, Carl A. '85
Johnson, Joseph William '79
Senty, Jim Anton '60
Thomas, Richard H. '63
Trnka, John Thomas '69
Zemke, Wayne Phillip '64

WV B Marcouiller, Roger Albert '60
Mueller, Gregory John '68
Pelt, Thomas Eugene '70
Petrie, Dennis James '78
Smith, Thomas M. '60
Van Handel, Gerald John '65
Wolf, Thomas Francis '59
Stachowicz, Robert Walter '70
Gerloff, James Robert '00
Dwan, Terrence Edward '68
Galles, Daniel Joseph '74
Riley, Robert Hugh '82
Scharton, Craig Allen '85
Simon, Ronald Wayne '81

WI A
WI B
WI Γ
WI Δ
WY A



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TAU BETA PI LAUNCHES NEW MEMBER WEBSITE

After months in development and recent testing by various Association volunteers, our new website has launched. The site represents a reorganization of the previous website and **most bookmarks will no longer work**.

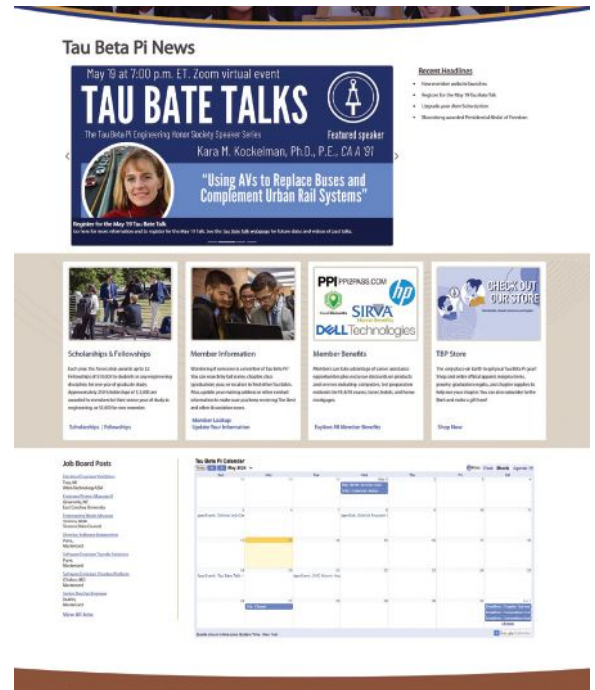
Officers can still access the Chapter Reporting System with the same URL. Chapter officers can find all of their important information at:

www.tbp.org/collegiate-officers.cfm

Thank you to TBII HQ webmaster Ryan Hubbuck for his dedicated work on the completion of this long-anticipated project.

We can't claim that it's completely perfect, so feel free to contact Ryan at r.hubbuck@tbp.org if you come across any errors, broken links, or you can't locate information. Check it out at:

www.tbp.org/home.cfm



New Member Benefit with Discounts from HP



WELCOME

We are excited to announce HP's new partnership with Tau Beta Pi. You now have access to a private store built for members, where we provide exclusive discounts on HP equipment. From back to school building to building your business, HP is here to save you money and provide a world class shopping experience. Get started now at:

www.tbp.org/hp-request.cfm

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- Access to exclusive member only promotions
- Buy more, save more

ALUMNI NOTES

Your fellow Tau Bates are interested in news about **you**.



CALIFORNIA ALPHA '08
Edward A. Pham M.D., Ph.D.

Edward was appointed to the OhmniLabs Medical Advisory Board, whose mission is to revolutionize healthcare through autonomous solutions. He is a leading microbiologist & immunologist and serves as an instructor of medicine in Gastroenterology and Hepatology at the Stanford Univ. School of Medicine.



MASSACHUSETTS ZETA '95
Ronald J. Kraus

Ron is the recipient of a 2024 Distinguished Alumni Award from the University of Massachusetts Amherst College of Engineering. He serves as the chief executive officer of Syner-G BioPharma Group, has a B.S. in mechanical eng'g from Amherst, and previously worked at Parexel, leading the company's consulting business.



CALIFORNIA BETA '11
Gregory J. Rubinstein Ph.D.

Gregory has joined the Institute for Defense Analyses (IDA) as a research staff member in the operational evaluation division of IDA's Systems and Analyses Center. He has three chemical eng'g degrees, including a B.S. from the California Institute of Tech., where he served as chapter corresponding secretary.



MASSACHUSETTS ZETA '04
Imona C. Omole Ph.D.

Imona, a chemical engineering graduate of the University of Massachusetts Amherst, was awarded a 2024 Distinguished Alumni Award from the college of engineering. He is an experienced leader in energy development, with 15+ years in the field and roles at ConocoPhillips, Phillips 66, and now at Verdant Energy LLC.



CALIFORNIA UPSILON '06
Jesse U. Bastian P.E.

Jesse was named president of M. Neils Engineering, Inc., where he's been serving as vice president, director of engineering since 2021 and is also principal engineer for public safety. He has a B.S. degree in electrical and electronics eng'g from Sac State Univ. and 20+ years of experience in the A/E/C industry.



NEVADA ALPHA '74
Albert H. Wigchert

Albert retired from ATOS, a digital transformation company, after a career in software development and previous work at Bull HN Information Systems, Inc. He has B.S. and M.S. degrees in electrical eng'g from the Univ. of Nevada, Reno, and Oklahoma State Univ., respectively. Albert and wife Margaret celebrated with a cruise.



FLORIDA GAMMA '11
Erum Qayyum P.E.

Erum recently started a new position as a processing industrial engineer level 2 with the United States Postal Service, where she has worked since 2023. She earned her master's degree in chemical engineering from the University of South Florida and previously worked as an educator in Illinois and Texas.



NEW JERSEY ZETA '14
Casey M. Fontana Ph.D.

Casey was recognized with an Outstanding Young Alumni Award from the University of Massachusetts Amherst College of Engineering, obtaining her structural eng'g Ph.D. there in 2019. She's the technical manager of offshore siting and energy assessment at Invenergy, a TBII Scholar (2013), and past NJ Zeta Chapter VP.



MASSACHUSETTS ZETA '17
Ashley L. Kaiser Ph.D.

Ashley was selected as a 2024 Outstanding Young Alumni Award recipient by the Univ. of Massachusetts Amherst College of Engineering. She works as a senior process engineer at 6K Inc., a materials manufacturing start-up. Ashley's M.S. and Ph.D. from MIT included research supporting aerospace materials for NASA.



TENNESSEE GAMMA '88
Brenda Shackelford P.E.

Brenda has joined CSDG as an associate. She has 30+ years of experience in civil engineering design and project management. Brenda has dedicated her professional career to serving her community and was previously the lead engineer for Windy Hill Park, Stokers Village Townhomes, and Sharpes Crossing Trail Design.

Send news about civic activities, honors, weddings, promotions, etc. to Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or to tbp.media@tbp.org. Deadlines: August 1 for **Fall** issue and November 1 for **Winter** issue. Include head shot, name, address, chapter/class year, and email address or phone number. We cannot accept graduation announcements. Thank you!

TENNESSEE GAMMA '79

Adedeji B. Badiru Ph.D., P.E.

Dr. Badiru retired in January 2024 from the Air Force Institute of Technology (AFIT) where he served as dean of the Graduate School of Engineering and Management for ten years. A distinguished industrial engineer, his career extends over 38 years. He joined the AFIT Graduate School of Engineering and Management in 2006 as the head of the systems engineering and management department and ascended to the dean's position in 2013.

Under Dr. Badiru's guidance, AFIT achieved the maximum 10-year reaffirmation of accreditation by the Higher Learning Commission and earned the esteemed designation as a National Center of Academic Excellence in Cyber Defense Research by the National Security Agency and Department of Homeland Security.

He is also a prolific author and mentor, contributing significantly to the academic community with 40+ books, 35 book chapters, 130 journal and magazine articles, and more than 200 conference presentations. His trademarked "DEJI Systems Model" for systems design showcases his expertise in mathematical modeling, project analysis, economic analysis, and systems engineering.

Dr. Badiru earned a B.S. degree in industrial engineering and M.S. degrees in mathematics and industrial eng'g from Tennessee Technological University. His Ph.D., from the University of Central Florida, is also in industrial eng'g. He is a registered professional engineer, a certified Project Management Professional, a Fellow of the Institute of Industrial and Systems Engineering, and a Fellow of the Nigerian Academy of Engineering.

His significant contributions have been recognized through numerous awards, including the Industrial Engineering and Operations Management Society International's Frederick Winslow Taylor Award in 2022, the Career Achievement in

Government Award from Career Communications Group in 2021, and the second annual Taylor and Francis Lifetime Achievement Award in 2020. Lastly, he was a frequent supporter of the OH Eta Chapter and a mentor to many students (Tau Bates included).



Dr. Badiru poses with the Ohio Eta Chapter Bent monument on the campus of the Air Force Institute of Technology. The statue was dedicated to the graduate school in recognition of outstanding contributions to education in science and engineering by the chapter, established in February 1959.



TEXAS KAPPA '07

Anthony J. Sanders

Anthony was the recipient of a "Science Spectrum Trailblazer" award at the 2024 Black Engineer of the Year (BEYA) Awards. He is a Sandia National Labs systems engineer and campus partnership manager, using his technical background to develop relationships with HBCUs. Anthony loves music and has an EE degree from Prairie View A&M Univ.



VERMONT ALPHA '14

Scott Patterson P.E.

Scott recently became a registered engineer in the state of Alaska where he works for Coffman Engineers focusing on pipeline integrity management. He also recently announced his retirement from World Cup Ski racing having competed for the U.S. Cross Country Ski Team at two Olympics (2018 and 2022), three World Championships (2019, 2021 & 2023), and in 116 World Cup starts.

ATTENTION COMPANIES & GRAD SCHOOLS
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STUDENTS & PROFESSIONALS IN THE WORLD



Do not miss the 2024 Tau Beta Pi
RECRUITING FAIRS

Virtual - OCTOBER 10

10:00 a.m. to 5:00 p.m.

In-Person - OCTOBER 24

at the Tau Beta Pi Convention
The Monument - Rapid City, SD

10:15 a.m. to 3:45 p.m.

See full details on RECRUITING opportunities at:
WWW.TBP.ORG/?RECRUIT



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CANDIDATES
FROM

257

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REACH ALL
ENGINEERING MAJORS
INCLUDING:

Mechanical
Electrical
Biomedical
Chemical
Computer



Member Change of Address

Members, keep your email and mailing addresses current in our system so you don't miss any issues of *The Bent!*

Send updated information to **tbp.memberupdate@tbp.org**. Please include your name, initiating chapter, year of graduation, and any preferred name changes.

Questions?

Contact Pat McDaniel at: **p.mcdaniel@tbp.org**

THE BENEFITS OF MEMBERSHIP

See the complete list at: **www.tbp.org/member-benefits.cfm**

DELL: Discount program on Dell branded personal products, electronics, and accessories.

HP: NEW partnership providing discounts on HP equipment. See **page 53** for more information.

LOCAL HOSPITALITY: Access to a worldwide inventory of hotels at exclusively discounted rates.

PPI: 20 percent discount on preparation materials for the FE/EIT and PE licensing exams.

CIVIL SERVICE: Receive automatic entry-level advancement of U.S. Government applicants to GS-7.

LINKEDIN: Join 36,150 members in our official group for professional networking and career discussions (search: Tau Beta Pi Engineering Honor Society).

TAU BETA PI JOB BOARD: Post a resume online and browse hundreds of engineering jobs at top companies.

COLLEGIATE CHAPTERS

263 COLLEGIATE CHAPTERS
257 ACTIVE — 639,127 MEMBERS

6 Inactive chapters shown in **BLUE**

A = ALPHA Δ = DELTA H = ETA K = KAPPA N = NU Π = PI T = TAU X = CHI
 B = BETA E = EPSILON Θ = THETA Λ = LAMBDA Ξ = XI P = RHO Y = UPSILON Ψ = PSI
 Γ = GAMMA Z = ZETA I = IOTA M = MU O = OMICRON Σ = SIGMA Φ = PHI Ω = OMEGA

AL ALPHA Auburn University
BETA University of Alabama
GAMMA Univ. of Ala. at Birmingham
DELTA Univ. of Ala. in Huntsville
EPSILON Univ. of South Alabama
AK ALPHA Univ. of Alaska Fairbanks
AZ ALPHA University of Arizona
BETA Arizona State University
GAMMA Northern Arizona University
DELTA Embry-Riddle Univ., Prescott
AR ALPHA University of Arkansas
BETA Univ. of Ark. at Little Rock
CA ALPHA UC Berkeley
BETA Calif. Institute of Technology
GAMMA Stanford University
DELTA University of Southern Calif.
EPSILON UC Los Angeles
ZETA Santa Clara University
ETA San Jose State University
THETA Calif. State Univ., Long Beach
IOTA Calif. State Univ., Los Angeles
KAPPA Calif. State Univ., Northridge
LAMBDA UC Davis
MU Calif. Poly St. Univ., San Luis Obispo
NU Calif. State Poly Univ., Pomona
XI San Diego State University
OMICRON Loyola Marymount Univ.
PI Northrop University (inactive)
RHO California State Univ., Fresno
SIGMA UC Santa Barbara
TAU University of California, Irvine
UPSILON Calif. St. Univ., Sacramento
PHI University of the Pacific
CHI California State Univ., Fullerton
PSI UC San Diego
OMEGA Harvey Mudd College
ALPHA ALPHA Calif. St. Univ., Chico
ALPHA BETA UC Riverside
ALPHA GAMMA San Francisco St. Univ.
ALPHA DELTA UC Santa Cruz
ALPHA EPSILON Univ. of San Diego
CO ALPHA Colorado School of Mines
BETA Univ. of Colorado at Boulder
GAMMA University of Denver
DELTA Colorado State University
EPSILON Univ. of Colorado at Denver
ZETA U.S. Air Force Academy
CT ALPHA Yale University
BETA University of Connecticut
GAMMA University of Hartford
DE ALPHA University of Delaware
DC ALPHA Howard University
BETA Catholic Univ. of America
GAMMA George Washington Univ.
FL ALPHA University of Florida
BETA University of Miami
GAMMA University of South Florida
DELTA University of Central Florida
EPSILON Florida Atlantic University
ZETA Florida Institute of Technology
ETA FL A&M Univ.-FL State Univ.
THETA Florida International Univ.
IOTA Embry-Riddle Aero. Univ.
GA ALPHA Georgia Institute of Technology
BETA Mercer University
GAMMA Georgia Southern Univ.
DELTA University of Georgia
ID ALPHA University of Idaho
BETA Idaho State University
GAMMA Boise State University
DELTA Brigham Young Univ.-Idaho
IL ALPHA Univ. of IL at Urbana-Champaign
BETA Illinois Institute of Technology
GAMMA Northwestern University
DELTA Bradley University
EPSILON S. Illinois Univ. at Carbondale
ZETA University of Illinois at Chicago
IN ALPHA Purdue University
BETA Rose-Hulman Inst. of Technology
GAMMA University of Notre Dame
DELTA Valparaiso University
EPSILON Trine University
ZETA Indiana Univ.-Purdue Univ. Indpls.
IA ALPHA Iowa State University
BETA University of Iowa
KS ALPHA University of Kansas
BETA Wichita State University
GAMMA Kansas State University

KY ALPHA University of Kentucky
BETA University of Louisville
GAMMA Western Kentucky University
LA ALPHA Louisiana State University
BETA Tulane University
GAMMA Louisiana Tech. University
DELTA Univ. of Louisiana at Lafayette
EPSILON University of New Orleans
ME ALPHA University of Maine
MD ALPHA Johns Hopkins Univ.
BETA University of Maryland
GAMMA U.S. Naval Academy
DELTA Univ. of Maryland Baltimore Co.
EPSILON Morgan State University
MA ALPHA Worcester Polytechnic Inst.
BETA Massachusetts Inst. of Tech.
GAMMA Harvard University (inactive)
DELTA Tufts University
EPSILON Northeastern University
ZETA University of Mass. at Amherst
ETA Boston University
THETA Univ. of Massachusetts Lowell
IOTA Western New England Univ.
KAPPA Merrimack College
MI ALPHA Michigan State University
BETA Michigan Technological Univ.
GAMMA University of Michigan
DELTA University of Detroit Mercy
EPSILON Wayne State University
ZETA Kettering University
ETA Lawrence Technological Univ.
THETA Oakland University
IOTA Univ. of Michigan-Dearborn
KAPPA Western Michigan Univ.
LAMBDA Grand Valley State Univ.
MN ALPHA Univ. of Minnesota-Twin Cities
BETA Univ. of Minnesota, Duluth
MS ALPHA Mississippi State University
BETA University of Mississippi
MO ALPHA Univ. of Missouri-Columbia
BETA Missouri Univ. of Science & Tech.
GAMMA Washington University
DELTA Univ. of Missouri-Kansas City
EPSILON Saint Louis University
MT ALPHA Montana State University
BETA Montana Tech. of the Univ. of MT
NE ALPHA Univ. of Nebraska-Lincoln
NV ALPHA University of Nevada, Reno
BETA Univ. of Nevada, Las Vegas
NH ALPHA Univ. of New Hampshire
BETA Dartmouth College
NJ ALPHA Stevens Institute of Technology
BETA Rutgers University
GAMMA New Jersey Inst. of Tech.
DELTA Princeton University
EPSILON Rowan University
ZETA The College of New Jersey
NM ALPHA New Mexico State University
BETA University of New Mexico
GAMMA NM Inst. of Mining & Tech.
NY ALPHA Columbia University
BETA Syracuse University
GAMMA Rensselaer Polytechnic Inst.
DELTA Cornell University
EPSILON New York Univ. (inactive)
ZETA Brooklyn Polytechnic (inactive)
ETA City College of CUNY
THETA Clarkson University
IOTA Cooper Union School of Eng'g.
KAPPA University of Rochester
LAMBDA Pratt Institute (inactive)
MU Union College
NU SUNY at Buffalo
XI Manhattan College
OMICRON SUNY at Stony Brook
PI Rochester Institute of Tech.
RHO NYU Tandon School of Eng'g.
SIGMA Alfred University
TAU Binghamton University
UPSILON U.S. Military Academy
NC ALPHA North Carolina State Univ.
BETA Univ. of North Carolina (inactive)
GAMMA Duke University
DELTA Univ. of NC at Charlotte
EPSILON NC A&T State University
ZETA East Carolina University
ETA Western Carolina University

ND ALPHA North Dakota State University
BETA University of North Dakota
OH ALPHA Case Western Reserve Univ.
BETA University of Cincinnati
GAMMA Ohio State University
DELTA Ohio University
EPSILON Cleveland State Univ.
ZETA University of Toledo
ETA Air Force Institute of Tech.
THETA University of Dayton
IOTA Ohio Northern University
KAPPA University of Akron
LAMBDA Youngstown State Univ.
MU Wright State University
NU Cedarville University
XI Miami University
OK ALPHA University of Oklahoma
BETA University of Tulsa
GAMMA Oklahoma State University
OR ALPHA Oregon State University
BETA Portland State University
GAMMA University of Portland
DELTA Oregon Institute of Tech.
PA ALPHA Lehigh University
BETA Pennsylvania State University
GAMMA Carnegie Mellon University
DELTA University of Pennsylvania
EPSILON Lafayette College
ZETA Drexel University
ETA Bucknell University
THETA Villanova University
IOTA Widener University
KAPPA Swarthmore College
LAMBDA University of Pittsburgh
MU Penn State Erie, Behrend College
PR ALPHA University of Puerto Rico
QATAR ALPHA Texas A&M Univ. at Qatar
RI ALPHA Brown University
BETA University of Rhode Island
SC ALPHA Clemson University
BETA University of South Carolina
GAMMA The Citadel
SD ALPHA S. Dakota Sch. of Mines & Tech.
BETA South Dakota State University
TN ALPHA University of Tennessee
BETA Vanderbilt University
GAMMA Tennessee Tech. University
DELTA Christian Brothers Univ.
EPSILON University of Memphis
ZETA Univ. of Tenn. at Chattanooga
ETA Lipscomb University
TX ALPHA University of Texas at Austin
BETA Texas Tech. University
GAMMA Rice University
DELTA Texas A&M University
EPSILON University of Houston
ZETA Lamar University
ETA Univ. of Texas at Arlington
THETA Univ. of Texas at El Paso
IOTA Southern Methodist University
KAPPA Prairie View A&M University
LAMBDA Texas A&M Univ.-Kingsville
MU Univ. of Texas at San Antonio
NU Univ. of Texas Rio Grande Valley
XI University of Texas at Dallas
UA ALPHA American Univ. of Sharjah
UT ALPHA University of Utah
BETA Brigham Young University
GAMMA Utah State University
VT ALPHA University of Vermont
BETA Norwich University
VA ALPHA University of Virginia
BETA Virginia Poly. Inst. & State Univ.
GAMMA Old Dominion University
DELTA Virginia Military Institute
EPSILON Virginia Commonwealth Univ.
WA ALPHA University of Washington
BETA Washington State University
GAMMA Seattle University
DELTA Gonzaga University
WV ALPHA West Virginia University
BETA West Virginia Univ. Inst. of Tech.
WI ALPHA Univ. of Wisconsin-Madison
BETA Marquette University
GAMMA Univ. of Wisconsin-Milwaukee
DELTA Milwaukee School of Eng'g.
EPSILON Univ. of Wisconsin-Platteville
WY ALPHA University of Wyoming

ALUMNI CHAPTERS

81 ALUMNI CHAPTERS
50 ACTIVE

31 Inactive chapters shown in **BLUE**

DISTRICT 1
Central CT, Hartford
Greater Boston Area, MA

DISTRICT 2
Buffalo, NY
Central Jersey, NJ
Long Island Suburban, NY

Newark, NJ
New York City, NY
New York Capital District, NY
Rochester, NY
Southern Tier, Binghamton, NY

DISTRICT 3
Lehigh Valley, Bethlehem, PA
Philadelphia, PA
Pittsburgh, PA
Wilmington, DE

DISTRICT 4
Baltimore, MD
Charlotte, NC
Hampton Roads, Newport News, VA
Kanawha Valley, Charleston, WV
Research Triangle, Durham-Chapel Hill-Raleigh, NC
Richmond, VA
Washington, DC

DISTRICT 5
Atlanta, GA
Central FL, Orlando
Daytona Beach, FL
Gainesville, FL
Miami, FL
Midlands, Columbia, SC
Palm Beach/Broward, FL

Piedmont, Clemson, SC
Puerto Rico
Southwest FL
Tampa Bay, FL

DISTRICT 6
Bluegrass, Lexington-Frankfort, KY
Central Alabama, Birmingham
Great Smoky Mountains, Knoxville-Oak Ridge, TN
Greater Gulf Coast, Mobile, AL
Louisville, KY
Mid-South, Memphis, TN
Rocket City, Huntsville, AL

DISTRICT 7
Ann Arbor Area, MI
Central MI, Lansing Cincinnati, OH
Columbus, OH
Dayton, OH
Flint, MI
Ohio's North Coast, Cleveland
SE Michigan, Detroit
West Michigan, Grand Rapids

DISTRICT 8
Chicago Area, IL
Central Illinois, Urbana-Champaign
Indianapolis, IN
Milwaukee Area, WI

DISTRICT 9
Kansas City, KS
Pioneer, OK
Rolla, MO
St. Louis, MO

DISTRICT 10
Central Texas, Austin/San Antonio
North Texas, Dallas-Fort Worth
Greater New Orleans, LA
Texas Gulf Coast, Houston

DISTRICT 11
Ames, IA
Minnesota, Twin Cities, MN

DISTRICT 12
Pikes Peak, CO
Front Range, CO/WY
Salt Lake City, UT
Treasure Valley, Boise, ID

DISTRICT 13
Albuquerque, NM
El Paso, TX
Phoenix, AZ
Sun City, AZ
Tucson, AZ

DISTRICT 14
Columbia River Basin, Richland, WA
Portland, OR
Puget Sound, Seattle, WA

DISTRICT 15
Sacramento Vly, CA
SF Bay Area, CA
SF Peninsula, Palo Alto, CA

DISTRICT 16
Los Angeles, CA
Orange County, CA
Greater San Diego, California
Southern California

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