SUMMER 2023

The Bent

Of Tau Beta Pi

THE ENGINEERING HONOR SOCIETY

Drought: Reengineering Water in the West

Introducing the 2023 TBP Fellows

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
LI 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

COLLEGIATE CHAPTERS

261 COLLEGIATE CHAPTERS
255 ACTIVE — 631,688 MEMBERS

*6 Inactive chapters shown in **BLUE***

Α = ALPHA Β = BETA Γ = GAMMA Δ = DELTA Ε = EPSILON Ζ = ZETA Η = ETA Θ = THETA Ι = IOTA Κ = KAPPA Λ = LAMBDA Μ = MU Ν = NU Ξ = XI Ο = OMICRON Π = PI Ρ = RHO Σ = SIGMA Τ = TAU Υ = UPSILON Φ = PHI Χ = CHI Ψ = PSI 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 University
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
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
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 Wlisconsin-Milwaukee
DELTA Milwaukee School of Eng'g.
EPSILON Univ. of Wisconsin-Platteville
WY ALPHA University of Wyoming

SUMMER 2023

The Bent

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COVER: Drought is affecting life in the American West. Engineers have responded with projects to conserve and create water resources.
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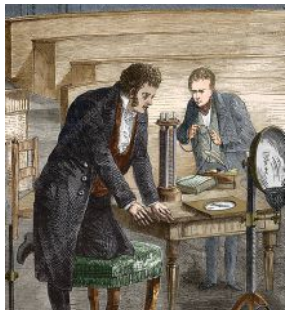
Member, *American Society for Engineering Education*; co-founder *Association of College Honor Societies*; and Affiliate, *American Association for the Advancement of Science.*

12 Meet the 90th group of outstanding Tau Beta Pi Fellows.



20 Enjoy another installment of the popular series "Why Do We Call it a...?"

36 Read about the installation of four new ΤΒΠ collegiate chapters this spring.

VISIT www.tbp.org

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COUNCIL'S CORNER

Michael L. Peterson, *IA A '89*, ΤΒΠ 2023 Secretary

VOLUNTEERING TO REACH THE POTENTIAL OF YOU AND OTHERS

One of the aspects of Tau Beta Pi that I find most rewarding and fulfilling is hearing about and seeing all the incredible work that members do to support not just the Association, but your local communities as well, through worthwhile causes like BSA and Girl Scouts, FIRST Robotics, Habitat for Humanity, and so much more. I know many of you have been active in volunteering through your local chapters, as current students or past students, supporting hundreds of initiatives at universities, local schools, and community organizations.

My intent with this column is to inspire those of you who may be in between volunteer opportunities or looking for a new opportunity to take the next step towards something in your volunteer world. Also, for those of you who, perhaps, have lost a bit of your volunteering passion due to life changes, the pandemic, or whatever else has been thrown your way, hopefully these ideas can re-energize you to volunteer in one of your communities, help you stay motivated, or even help you motivate others (your kids, friends, family, co-workers) to get involved in volunteering in a new way.

WHYS OF VOLUNTEERING

Here's a quick refresher on many of the great reasons why volunteering is important and good to do (courtesy of *indeed.com*), along with a few additional thoughts from my experience:

1. **Provides you with a sense of purpose:** As Winston Churchill said, "You make a living by what you get. You make a life by what you give."

2. **Provides a sense of community:** If you get involved in a community, you will feel a stronger, more positive connection to it, which will help you recognize and get involved in more opportunities to make it better. Note that the term "community" here is meant in the very broadest way possible: *any kind of social unit where people have something in common*: location, religion, background, heritage, etc.

3. **Helps you meet new friends:** Volunteering is a great way to connect with like-minded people who you can form deeper friendships with. These kinds of positive opportunities can be rare in today's world where so many connections are made over digital media — so take advantage of these to interact in-person with other great humans like yourself.

4. **Increases your social skills:** Building on point #3, volunteering is a way to interact with new people in new ways, which can help you grow your own comfort with new situations. It may feel awkward to show up the first time to meet a group of strangers working on a volunteer project, but take comfort in the fact that everyone was new to the project at one point, and once you get started, I can almost guarantee you will be glad you took the plunge to try it.

5. **Improves self-esteem:** As a volunteer, you may discover new talents you were unaware of. Or, find that you have something to contribute in an area you never thought of before, or even knew existed. These findings can become incredible building blocks to defining who you are as a person, and even figuring out what your purpose here on earth may be.

6. **Teaches valuable skills:** In addition to using your current skills while volunteering, it can be a way to try out or learn brand-new skills in a safe, supportive environment. Don't be afraid to try this — if you volunteer for something new, let people know you're new to it but aren't afraid to learn. You will often be surprised at the positive reception and support you will receive in return.

7. **Provides job prospects:** This may sound a bit self-serving at first, but there's no denying that volunteering can connect you with new people and skills that can lead to future assignments and new opportunities. Don't volunteer just for this purpose, but if something works out, don't feel guilty about it, either.

8. **Brings fun into your life:** As you participate in or create volunteer opportunities, find ways to make it enjoyable for the participants. For example:

   a. Measure and share what the volunteers accomplish, so they feel a sense of accomplishment (number of meals served, etc.).

   b. Challenge each volunteer team to come up with a name or flag for their team before they get started; this only takes 5-10 minutes, but it can help build a sense of unity and gentle competition among the teams, which can make a potentially tedious task much more entertaining.

9. **Helps you be happier:** It's okay if volunteering makes you happy; don't feel guilty about that! If you enjoy it, you will do it longer and better, so find a way to volunteer that gives you satisfaction.

10. **Gets you out of your comfort zone:** Don't be scared to try something new when you sign up for volunteering. It is among the lowest-risk ways to take on a new challenge and try it out; after all, if it doesn't go perfectly, you will probably still get paid the same amount.

Council's Corner continues on page 35.

YOUR LETTERS

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

DEI Distraction

I received my spring copy of the magazine this week and am really concerned about the DEI article. Tau Beta Pi is supposed to be focused on engineering and science. I consider DEI just another distraction, among many.

Distractions:

- Green Energy
- Global Warming
- LGBTQIA+
- Pronouns
- Ukraine
- Homeless
- Parents (Terrorists?) v School Boards
- Liberal DA's

Instead of:

- Energy Independence
- The economy/inflation
- China
- The Southern Border
- Education of our Children (low academic scores compared to the rest of the world)
- Crime and Prosecution
- Adequate police staffing and associated training

I feel that Tau Beta Pi should concentrate on advancing engineering excellence and technology development.

Judd L. Putnam, *TX Θ '73*

No Equal Outcomes

I trashed my copy of *The Bent* when I saw that ΤΒΠ has gotten into divisive woke politics.

Science, mathematics, and engineering knows no race or ethnicity. Stop polluting minds that equality means equity. It does not.

There are not equal outcomes for everyone and that's why honor societies exist — to recognize an outstanding academic outcome. Awarding everyone a participation trophy is certain doom for our world leadership in the sciences and engineering.

This direction is just too bad for the foundations of Tau Beta Pi — next, maybe I'll return my certificate!

Lou L. Kriso Jr., *OH Ε '72*

Social Justice Viewpoints

I read the articles in this issue with interest. I am not sure if I should be encouraged that there was diversity in the articles or discouraged that ΤΒΠ has been caught up in the WOKE ideology that seems to permeate our society today.

The "Feature Introduction from the ΤΒΠ Diversity, Equity & Inclusion Committee" actually made the point that I have made to others though not quite as I would have said it. They did say that we need to "grow our initiation pool." I agree that ΤΒΠ and every organization needs to find ways to reach out to people who are not currently in engineering. I completely agree with providing an "equitable abundance of opportunity" with a strong emphasis on opportunity. We need to provide the opportunity for INDIVIDUALS in diverse groups to succeed. We should not have a goal of having a diverse result for a group identity. That is not what I want nor what engineering needs. I still remember a professional Affirmative Action instructor for our company stating that he wants all companies to reach out to all races, genders, and other diverse groups to get them into jobs. He also stated unequivocally that when he is flying, he wants the BEST, not the most diverse pilot and crew in the airplane. He had no use for putting people in jobs because of diversity only, using diversity to give INDIVIDUALS the opportunity to be the BEST.

I then read with disappointment about social justice and the assertion that not having social justice was "injustice" in the "Engineering for Equity: Factors and Aspirations" article. The article seemed to blame engineers for all sorts of social ills that should be placed at the feet of politicians and company leaders. I concur that engineers should speak out and have training in community affairs so they can be responsible citizens and know to speak out about projects or work that is not in the community interests or decide to find other work that is not harmful to people. I don't agree that engineering subjects should be taught through the lens of "Social Justice." Engineering subjects should be taught through the lens of "engineering excellence." Social justice, if taught, should be a separate course.

The third article "When Professional Engineering Services Go Awry" was a very interesting counterpoint to the "equity" and "social justice" theme of the other two articles. It very clearly said that no matter your "equity" and "social justice" viewpoints, you have to do the best job in engineering that you can. This means that individuals must be trained to be the best engineers that they can be with an understanding of "equity" and "social justice," NOT to do engineering to satisfy an "equity" and "social justice" viewpoint.

As I said at the beginning, I'm not sure where ΤΒΠ is headed in supporting engineering education — interesting article.

Paul D. Mandigo, *NY Δ '65*

ΤΒΠ in Good Hands

I really enjoyed the Council's Corner article by Joan Sciacca in the spring issue. It made me feel that Tau Beta Pi is truly in good hands moving into the future. Her explanation of the SMART (Specific, Measurable, Achievable, Relevant, and Timely) concept really spoke to me as an engineer.

Unfortunately, my enthusiasm was quickly dampened by Chris McComb's article regarding the Diversity, Equity & Inclusion Committee. My observations of valedictorians (a group to which I do not belong) is that they were more intelligent than their peers to have earned their excellent grades, not that they "had more doors opened for them." Then, we are told that chapters should "lengthen and broaden the pathways to membership" for people who may "one day confer honor upon their Alma Mater." This sounds like lowering the current requirements to be included in our prestigious Engineering Honor Society. How exactly one can peer into someone's future to determine their ability to confer honor on their alma mater doesn't seem very "measurable" according to Ms. Sciacca's article and, therefore, doesn't sound very "SMART."

Fortunately, Richard Redano's article regarding "When Professional Engineering Services Go Awry" offers some advice to firms who might hire someone who was inducted into Tau Beta Pi through Mr. McComb's broader pathways...make sure you have plenty of malpractice insurance!!

Steven M. Thomas, *MO Α '88*

WHO'S WHO IN TAU BETA PI

Recognizing Tau Bate accomplishments.

Linda M. Abriola Ph.D.

Pennsylvania Zeta '76

was elected as a fellow of the American Association for the Advancement of Science for "outstanding contributions to our understanding of the transport and persistence of contaminants in the subsurface and the design of remedial strategies." Linda is an expert on the integration of mathematical modeling and lab experiments for studying and predicting the transport and fate of reactive contaminants in the subsurface.

Scott Goldstein Ph.D., USAF ret.

California Delta '97

was awarded the Distinguished Service Medal, with oak leaf cluster, and inducted into the U.S. Army Infantry's Order of Saint Maurice by the U.S. Under Secretary of the Army, Gabe Camarillo. Scott retired March 1 from the U.S. Air Force as a Major General. He recently served as the Mobilization Assistant to the Military Deputy, Office of the Assistant Secretary of the AEF for Acquisition, Tech. & Logistics, the Pentagon.

Curt D. Gomulinski

Michigan Epsilon '01

was elected to serve as president of the Association of College Honor Societies (ACHS) for 2023-24. He's served as an ACHS board member since 2018, most recently as secretary (2020-21) and vice president (2021-23). Tau Beta Pi has been part of ACHS since the beginning with ΤΒΠ President A.D. Moore being a key figure in helping establish ACHS in 1925. Curt is the fourth ΤΒΠ leader to serve as ACHS president.

Gregory L. Hyslop D.Sc.

Nebraska Alpha '80

will retire in June after a 35-year career at Boeing. Most recently, he was the company's chief engineer and executive vice president of Engineering, Test & Technology. Next, he will take over the role of chief engineer emeritus and assist with program management, leadership development, and university relations efforts. He has a B.S. in electrical eng'g, an M.S. in mathematics, & a doctor of science in systems sciences.

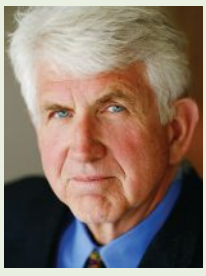
Maria C. Lehman P.E.

New York Nu '81

was appointed to the President's National Infrastructure Advisory Council, which advises the White House on how to reduce physical and cyber risks and improve the security and resilience of the nation's critical infrastructure sectors. As ASCE president since 2021, Maria is GHD's infrastructure market leader for the U.S., focusing on federal and NY state government relations programs.

Robert M. Metcalfe Ph.D.

Massachusetts Beta '69



was awarded the 2022 Association for Computing Machinery A.M. Turing Award "for his invention of Ethernet." He is an MIT Computer Science and Artificial Intelligence Lab research affiliate, MIT Corp. life member emeritus, founder of 3Com Corp., and emeritus professor at the Univ. of Texas. Often referred to as the "Nobel Prize of Computing," the award comes with a $1 million prize provided by Google.

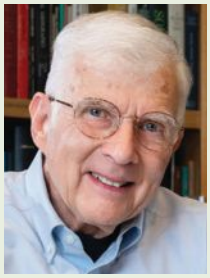
Neal Mohan

California Gamma '96

was named CEO of YouTube in February, where he has been serving as Chief Product Officer since 2015. Previously, he worked at Google as senior vice president, display and video ads, and currently serves on the board of directors for Stitch Fix and 23andME. Neal is an Indian-American, with a B.S. degree in electrical engineering and an MBA, both from Stanford University.

Mark Monmonier Ph.D.

Maryland Alpha '64



was awarded Lifetime Achievement Honors by the American Association of Geographers (AAG). He was cited for "five decades of outstanding contributions to geographic research, most notably in the fields of cartography and geographic communication." Mark is a distinguished professor at Syracuse University and was also recognized by AAG as a mentor and inspiration to hundreds of students.

Alfonso Ortega Ph.D.

Texas Theta '76

has been named a 2023 inductee to the SEMI-THERM Thermal Hall of Fame. The lifetime achievement award recognizes individuals who have made significant contributions to the development and commercialization of thermal management technologies. He is a professor of engineering at Villanova University and specialist in heat transfer, thermo-dynamics, and thermal management systems.

AMERICAN ACADEMY OF ARTS & SCIENCES

Honoring excellence, innovation, and leadership, the AAAS elected nearly 270 new members to the Academy in 2023. The following Tau Bates were elected in the Engineering and Technology category.

Guillermo A. Ameer D.Sc.
Texas Alpha '93
Professor & Director
Northwestern University

Rafael L. Bras Ph.D.
Massachusetts Beta '72
Chair & Professor
Georgia Tech

Susan G. Margulies Ph.D.
New Jersey Delta '82
Asst. Director Eng'g Directorate
National Science Foundation

Carlos Rinaldi-Ramos Ph.D.

Puerto Rico Alpha '98

was elected to the 2022 class of fellows by the American Association for the Advancement of Sciences (AAAS). This recognition is among the most distinctive in academia and recognizes extraordinary impact and achievement. Carlos is chair and professor in the dept. of chemical eng'g at the Univ. of Florida. He is an international leader in the fields of ferrohydrodynamics and biomedical applications of magnetic nanoparticles.

Jackie Y. Ying Ph.D.

New York Iota '87

has won the 2023 King Faisal Prize in Science for "the synthesis of various advanced nanomaterials and systems, and their applications in catalysis, energy conversion and biomedicine." The prize recognizes outstanding works by individuals and institutions that "enrich human knowledge and development." She is the first woman to receive the Science prize and is a professor of chemical engineering at MIT.

Ray A. Rothrock P.E.

Texas Delta '77

was presented the second ever Malina Medallion Award by the Hagler Institute for Advanced Study at Texas A&M University. The honor recognizes "business executives' contributions to technology & culture." He was cited for being a "nationally recognized venture capitalist and for his multi-disciplinary contributions to technology as well as to the arts, music, and critical thinking."

Bevlee A. Watford Ph.D.

Virginia Beta '81

was appointed by President Biden to serve as a member of the National Science Board. She is the associate dean for equity and engagement and a professor of engineering education at Virginia Tech. Bevlee will assist the Board in the roles of establishing the policies of the National Science Foundation within the framework of applicable national policies and serving as an independent body of advisors to the President & Congress.

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Drought and the Reengineering of the American West

BY ALAN S. BROWN

Drought is reshaping the American West. Engineers have responded with massive projects to conserve and create water resources.

San Diego's wake-up call came in 1991, when the Los Angeles-controlled Metropolitan Water District of Southern California cut its water allocation by 30 percent during a drought. That was when the fast-growing city realized it needed to secure new water supplies.

Las Vegas faced a similar moment during a drought in 2002. With only four inches of rain annually, Vegas is the driest city in America's driest state. It could not support future growth with the water it had.

San Diego and Las Vegas were not alone. Since the 1990's, countless Western cities, counties, and states have reassessed their water supplies. Many began looking for conservation and engineering solutions years ago.

It is a good thing they did. Today, signs of drought are visible everywhere and especially along the Colorado River. If the American West has a beating heart, it is the 1,450-mile Colorado, which serves nearly 40 million people and 5 million acres of farmland in seven states, 23 Native American reservations, and two states in Mexico. It supplies the nation's two largest reservoirs; Lake Mead, just southeast of Las Vegas, and Lake Powell, northeast of the Grand Canyon. And it is ailing.

Twenty years of low snowfall has slowed the once-mighty Colorado and dropped Lake Mead's and Lake Powell's storage levels precipitously. The lakes are so low, power companies worry about producing hydroelectric power from their dams. Others fret the reservoirs will drop to "dead pool," a point below their water distribution outlets.

The situation is so bad, the federal government intervened this spring when the basin's stakeholders could not agree on how to divvy up the Colorado's dwindling waters. Within the states, infighting continues among cities, suburbs, and farmers struggling for their shares.

Record snowfall in 2023 put off a day of reckoning, but not for long. "If you look at the record, there has been a significant decline in flow, not just in the 2000s, but going back to the 1980s," says Jim Schlaman, director of planning and water resources for Black & Veatch, a global water design/build engineering firm.

"People have their own views on climate change, but we don't need to debate the merits of what is causing it. You cannot stand on the edge of Lake Mead, Lake Powell, or Lake Mojave and say we don't need to be worried about this. We absolutely need to be thinking about those issues."

The problem is not just limited to the Colorado River Basin. It is everywhere in the West. A recent report warned that continued drought would dry up Utah's Great Salt Lake, allowing winds to blow toxic salts and minerals through the cities and towns on its eastern shore.

Fortunately, preparations go far beyond the usual campaigns to slash lawn watering and take shorter showers. Governments have invested heavily in recycling water, recharging aquifers and reservoirs, capturing rain runoff, reducing agricultural losses, and investing in toilet-to-tap and seawater desalination facilities.

In short, the fast-growing American West has been reengineering its infrastructure to thrive in a world where drought is the new norm. And that vast effort has only just begun.

REFILLING THE RESERVOIR

Technology and civil engineering projects vary greatly from one community to the next. Some stretch water supplies through reuse. Others seek new sources of water.

Take Las Vegas, for example. About 10 percent of the city's water comes from a local aquifer, the rest from Lake Mead. Yet, despite the reservoir's decline, Vegas feels upbeat about its future.

This is because Vegas has attacked its water dependency along a broad front. It recycles nearly all water used indoors and sends much of it back to Lake Mead. It is allowed to withdraw every gallon of water it adds to the reservoir in addition to its regular allotment.

This is called indirect potable reuse. After wastewater exits the city's buildings, it goes to a large wastewater treatment plant. After mechanical rakes remove any solids, the water goes to settling tanks. There, flocculants sink solids to the bottom, where they are eventually dried by centrifuge and placed in landfills to speed trash decomposition.

Bacteria added to the remaining water break down organic contaminants and remove phosphorus while bubbling oxygen converts the ammonia in urine into nitrogen gas. Water then undergoes filtration through sand and anthracite coal to remove particulates and any remaining phosphorous. The final step involves treating the water with ultraviolet lamps to kill pathogens.

The entire process takes about six hours. The resulting water is not clean enough to drink. Instead, Las Vegas uses some of it to irrigate golf courses, parks, and schools; cool power stations; and suppress dust during construction.

It sends the rest, about 90 million gallons per day, to the 14-mile-long Las Vegas Wash. There, it mixes with rain runoff and shallow groundwater and winds through 200 acres of wetlands that filter out any remaining contaminants before it enters Lake Mead. The city then purifies the water it withdraws to drinking standards.

INCENTIVES

Recycled, or non-consumptive, water accounts for about 40 percent of Las Vegas' water use. The remaining 60 percent is consumptive water the city cannot reclaim. The two largest consumptive uses are irrigation for landscaping and evaporative cooling systems for hotels, warehouses, and office buildings.

Large irrigation systems, such as golf courses and parks, often use non-drinkable recycled water. Residences, however, use drinking water to irrigate their homes. To reduce use, Vegas limits watering to three nights per week (to prevent evaporative losses during hot days). It prohibits new grass lawns and offers incentives of up to $3 per square foot to replace grass with sand, stone, and native plants that do not need watering. It also limits pool sizes to 600 square feet to prevent evaporative losses that can reach 100,000 to 150,000 gallons annually from 2,000-to-3,000-square-foot "megapools."

The city also targets evaporative, or swamp coolers used to air condition hotels and warehouses. They work by drawing hot air through water-saturated media. As the air heats and evaporates the water, its temperature drops. Swamp coolers transfer heat very efficiently in hot, dry environments but vaporize a lot of water along the way. A large hotel might operate 40 to 50 such units.

Las Vegas put a moratorium on evaporative coolers, says Dave Johnson, deputy general manager of operations for the Las Vegas Water District. It also launched a program that pays companies half the cost, up to $500,000, to convert to more water-efficient mechanical (compression-based) coolers.

The Las Vegas Wash just before its waters enter Lake Mead. Photo credit: Stan Shebs

Mechanical systems, however, use up to 20 percent more energy. This translates into a lot of money, especially for hotels that run them 24/7. As a result, some participants choose to convert to hybrid systems that combine mechanical and evaporative elements to reduce water while managing electricity costs.

"This program has been successful so far, and is really, really good at capturing small to medium-large projects," Johnson says. "We've also worked with people who want to participate on a larger scale, even if it doesn't fit the confines of our policy."

In addition to maximizing consumptive and non-consumptive water, Las Vegas also built a $1.4 billion intake pipe and a low-lake pumping station to draw water from Lake Mead. They will continue to supply water even if the reservoir drops below its former "dead pool" point.

TOILET-TO-TAP

Other municipalities have also embraced indirect water reuse. Just south of Los Angeles, the Orange County Water District met its needs from local aquifers throughout the 1990s. Today, the county recycles 130 million gallons of partially purified water daily, injecting it into those same groundwaters. This stops seawater from seeping into the aquifer while breaking down contaminants over time.

Los Angeles County itself operates 10 reclamation facilities as part of one of the world's largest indirect water reuse programs. Rather than discharging wastewater to the Pacific Ocean, LA injects some recycled water into local aquifers and sends the rest through purple pipes (so no one confuses it with drinking water) for industrial, commercial, and recreational use.

LA is also building an ambitious series of cisterns in greenspaces around the city to capture stormwater runoff, so the county can treat and reuse it.

According to the LA County Sanitation District, the water it recycles "essentially meets drinking water standards." So, why not purify it the rest of the way? All it would take is an additional ozonation step. After all, injecting mostly pure reused water into an aquifer only re-contaminates it with naturally occurring microbes and chemicals that have leached underground. Moving from indirect potable reuse (IDR) to direct potable reuse (DPR) would simplify processing and save the county money.

Even if the technical argument is straightforward, a process unfortunately tabbed "toilet-to-tap" 30 years ago is clearly not for everyone.

LA, however, might be a special situation, says Lindsay LaBrecque, a water engineer at Jacobs Engineering, a major water project developer. LaBrecque, who grew up in LA and works there now, remembers listening to conservation campaigns as a child. "We've been conditioned to understand water shortages and how serious they are," she says. "I think that has made everyone more open-minded."

DPR hinges on government regulations, which California promises to deliver by the end of 2023. After suffering from severe droughts from 2007-09 and from 2011-17, California is looking for new sources of water. It is not alone. Texas has approved DPR and so has Arizona (on a case-by-case basis). Colorado is considering legalization and so is Florida.

Still, progress is slow. In Texas, Wichita Falls operated a DPR plant for a year in 2014, during a punishing five-year drought. Its 5-million-gallon daily output replaced one-third of the city's drinking water. El Paso, which operated a DPR demonstration plant for eight months in 2016, plans to open a 10-million-gallon facility in 2026.

Los Angeles' demonstration plant opens in late 2024. The facility will purify water from the nearby Glendale water recycling plant but will recycle it through its aquifers to ensure the facility hits safety specifications consistently.

DESALINATION

Fast-growing San Diego faced many of the same challenges as Los Angeles, but with two critical differences. Much of its water came from the LA-controlled Metropolitan Water District of Southern California. When LA needed water during a 1991 drought, it cut San Diego's allocation by 30 percent. Also, San Diego lacked the type of aquifers needed to recycle water.

San Diego realized that 95 percent of its water came from outside its jurisdiction and attacked the problem along a broad front. In 2003, it signed a deal with farmers in Imperial Valley, who use nearly three-quarters of the water California receives from the Colorado River. The valley's irrigation district distributed much of that through canals lined with packed soil that let water soak into the ground. In exchange for building 58 miles of impervious concrete canals, San Diego received a portion of the 25 billion gallons of water saved annually.

Pressure recovery modules at Poseidon Water's Carlsbad desalination plant in San Diego County.
Photo credit: Poseidon Water

Las Vegas built its own intake tunnel to draw water from the lowest depths of Lake Mead even during drought. Brierley Associates used a custom-built drilling machine to dig out the tunnel. Photo credit: Brierley Associates

Orange County Water District manages the large groundwater basin that provides reliable, high quality groundwater to 19 municipal and special water districts that serve 2.4 million customers in north and central Orange County. Shown here, an array of reverse osmosis cartridges. Credit: Orange County Water District

In 2015, the city raised the San Vicente Reservoir by 117 feet, more than doubling its storage capacity. The reservoir captures runoff from the foothills 25 miles northeast of the city and gives the county, which has scant underground aquifers, a way to recycle water. San Diego is also planning to build a DPR plant to purify more of its water for drinking.

The city's most ambitious project, however, was its water desalination plant, the largest in the Western Hemisphere. Opened in 2015 by Poseidon Water, a Canadian company, it produces up to 54 million gallons per day (20 billion gallons per year) of dependable, drought-proof, drinkable water.

Modern desalination plants are built around reverse osmosis (RO) membranes and pressure exchangers. RO membranes are paper-thin films of inexpensive polyamide (nylon) stretched over a costly polysulfone support layer. The Poseidon plant pressurizes seawater to 1,000 pounds per square inch, forcing it through the spaces between the membrane's long polyamide molecules while leaving the charged salt ions on the other side.

When the plant first opened, it could turn 30 to 40 percent of seawater into fresh water. That has risen to 50 percent today, says Michelle Peters, Poseidon's technical and compliance manager.

It takes a lot of energy to pump 50 million gallons of water through membranes every day. Pressure exchangers reduce those costs. Pioneered by Energy Recovery of San Leandro, CA, these ceramic systems have a single moving part, a rotor. As it rotates, high pressure water exiting the RO membranes contacts low-pressure seawater coming into the exchanger. This accelerates the seawater out of the exchanger, boosting its pressure to 600 psi to 700 psi. Mixing this stream with seawater entering the pump slashes the energy needed to raise its pressure to 1,000 psi by 40 percent, Peters says.

Even so, desalinated water is expensive. It costs about $2,200 to $2,500 per acre-foot (equivalent to 325,000 gallons), about twice as much as piping in Colorado River water.

In times of drought, however, that price could be a bargain, says **Meagan Mauter,** *TX G '06*, research director of the National Alliance for Water Innovation, a desalination technology research hub funded by a five-year, $110 million Department of Energy grant. Desalinated water is always available, even during the worst drought, and San Diego's contract with Poseidon caps the cost. "During a drought, it's better than being extorted for $4,000 by farmers who hold senior water rights," she says.

Sometimes, desalination can even compete with indirect potable reuse. "The only suitable place for San Jose to inject IPR water is the Los Gatos foothills west of the city," Mauter says. "Building a pipeline in a city is expensive and the total infrastructure would cost about $1 billion, if you could get it done with all the right-of-way and environmental issues. It's going to take 15 years to get anything built, and so it's practically impossible."

Desalination plants, however, raise environmental red flags. Their briny discharge may deplete ocean oxygen and harm seagrass, small fish, and other aquatic life. Plant operators insist that locating outlet pipes properly and equipping them with diffusers solves most of these problems. Even so, environmental risk was a key reason Los Angeles voted down a desalination plant in early 2023.

Operating costs also keep costs high. The Poseidon plant, for example, operates 16,000 RO membranes, and they are vulnerable to biofouling, Peters said. To prevent organic matter from gunking them up, they are backflushed frequently.

Even then, the site's RO trains move water from the first to the last membrane in a train. To perform optimally over their five-to-seven-year lifespan, plant technicians must constantly monitor and swap membranes to equalize their exposure to seawater.

Despite their issues, RO membranes are a critical water purification technology. They are essential for purifying seawater and also the brackish water found in estuaries and other places where fresh water meets seawater. Many direct and indirect water reuse plants also use RO membranes to remove salt often found in wastewater.

RO membranes could solve many of the West's water issues. Fortunately, there is still room for improvement.

ATTACKING COSTS

The National Alliance for Water Innovation is one of several large research organizations looking for ways to improve water resiliency by rethinking water systems as well as RO membranes. Mauter sees several ways to reduce cost.

One possibility involves distributed processing. Rather than release wastewater into a municipal sewer system, she believes large facilities will increasingly recycle water to not-quite-drinkable standards and reuse it for toilets, air conditioning, industrial processes, landscape maintenance, and the like. Many industrial facilities already reclaim water for processing water, heat exchange, cooling, and other applications.

San Francisco makes closed-loop recycling mandatory for new office buildings larger than 100,000 square feet. Salesforce Tower, the city's tallest office building, is an example. Its wastewater processing system takes up 10 parking spaces. In that space, it squeezes filters, a fast, high-pressure biodigester to breakdown wastes, an ultrafiltration membrane to remove particulates and bacteria, and an RO membrane. The system then treats water with ozone to destroy bacteria and chlorinates it to keep it from contaminating the building's water distribution system. Hundreds of sensors monitor the system, inspecting water quality and processing equipment.

Membranes could also use an upgrade. Mauter wants them to run at higher recovery rates without scaling, handle hot industrial water, and stand up to chlorine and acid. She wants materials that are easier to clean.

She also expects breakthroughs in system engineering. "RO-based plants are complex, interconnected systems to operate," she says. "We have been trying to evaluate where a small change in technology could have a large impact on the overall system."

One possibility is membranes that can remove more freshwater and withstand higher brine concentrations. This requires membranes that withstand higher pressures and whose selectivity is tailored to specific applications. Research also shows that better mass and thermal transfer at the membrane's surface has a significant impact on unit operations.

She also wants to see better ways to respond to water emergencies, which are often local. "That would involve inexpensive modular plants that we could run for a year or two and then send it somewhere else it is needed," Mauter says. "That's a very different design space than we are building now."

SECURING WESTERN WATER

Those design spaces will certainly continue to evolve. Reengineering the West's future water security will bring together the latest technologies, like desalination plants and water recycling systems, and some of its most ancient, like water storage cisterns and dams.

Today, most of that work is confined to cities and suburbs. Yet, agriculture uses much of the West's water. It absorbs 80 percent of the Colorado River's flow, using it to irrigate 15 percent of the nation's farmland and produce 90 percent of its winter vegetables.

Farmers have begun to reduce consumption as water supplies have declined. Some have lined canals while others have switched to spray or drip irrigation. Yet, many farms still flood their fields to prevent the buildup of herbicides, pesticides, and other agricultural chemicals on their land.

Farmers often have senior water rights, but governments may be rethinking that. In Arizona, the state's ire focused on Saudi Arabian companies that grow alfalfa and ship it overseas as fodder for dairy cows. The state recently rescinded two of their water drilling permits.

San Diego County's Pure Water Oceanside plant will purify recycled water to drinking water standards. Along with two sister facilities, the plant will provide more than 30 percent of the city's water supply. Photo credit: City of Oceanside /Jeremy Kemp

Yet, Saudi farmers represent only a small fraction of the problem. Arizona has other farmers who are depleting state aquifers during a drought. In California, it takes about one gallon of water to grow each almond nut, and about 70 percent of them are exported overseas. Eventually, Arizona, California, and every other Western state must either increase water resources dramatically or rethink the type of agriculture it allows and how it allocates water between cities and farms.

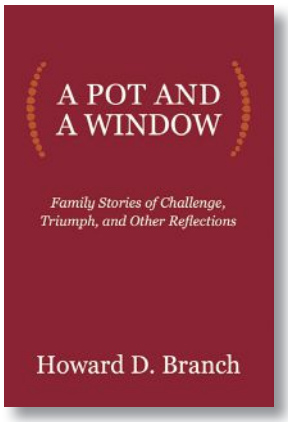
No matter what they decide, cost will play a role. "Water is going to be more expensive," Black & Veatch's Schlaman says. "In the past, we had ample supply and low demand. Now, that is tipping and we're going to have to invest in infrastructure to make sure our supplies are sustainable."

"Look what we pay for cable or phones or electricity. Water should not cost one-tenth the amount of those other commodities. If our population is going to grow, we will have to invest."

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.**

Authors

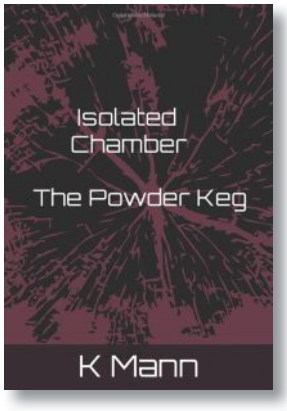
Recently published a book? If so, we would like to recognize you! Send details and a cover image to d.lane@tbp.org. Note: Due to the popularity of this section, submissions are first come, first served, as room allows. Thanks!



Howard D. Branch
District of Columbia Alpha '82

A Pot And A Window

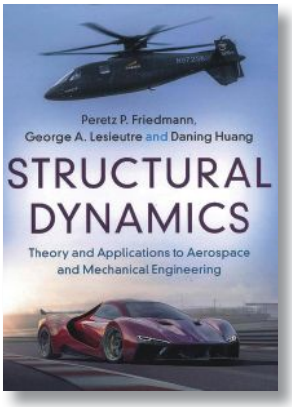
Howard spent 33 years supporting the space program. Since retiring from NASA as an assistant division chief, he has written, in a light-hearted way, about life for him and his siblings as they grew up in a large African American family in rural Mississippi during the mid-1900s. He holds a master's degree in mechanical eng'g from Howard University.



K. Mann
Ohio Beta '99

Isolated Chamber – The Powder Keg

This is the debut novel for Mann (pseudonym), and this "fast-paced, heart-pounding, science fiction action thriller is both written by a Tau Bate and has a Tau Bate as its hero." A young engineer's life is erased and he is in a race against an unknown, psychotic enemy who will stop at nothing to destroy him. Published in February 2023, it is available in paperback and on Amazon and Kindle.



George A. Lesieutre, Ph.D.
Massachusetts Beta '81

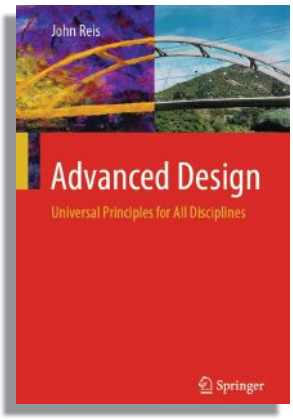
Structural Dynamics: Theory and Applications to Aerospace and Mechanical Engineering

George, an aerospace engineering professor at Penn State and AIAA Fellow, co-authored a graduate-level textbook with Peretz Friedmann and Daning Huang. Published by *Cambridge University Press* in February 2023, the book distinguishes itself from other texts in thoroughly covering the treatment of damping, rotating structures, and parametric excitation.

John C. Reis, Ph.D.
Oregon Alpha '77

Advanced Design: Universal Principles for All Disciplines

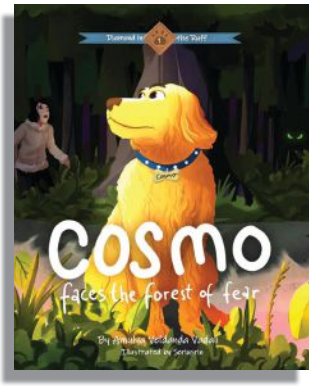
John presents a textbook for all advanced design students — graduate and undergraduate alike. It explains the universal principles of design useful to all disciplines and includes numerous examples to demonstrate the principles that the book introduces. John recently retired from East Carolina University and is now a professor emeritus.



Amulya Veldanda Vadali
New Jersey Zeta '18

Cosmo Faces the Forest of Fear

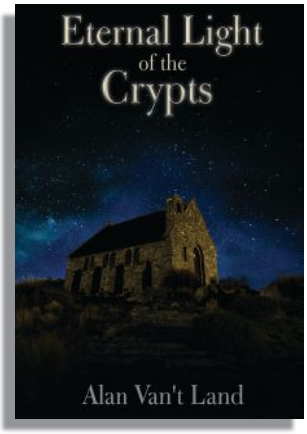
Amulya is author of the award-winning Diamond in the Ruff series for children. The first book of the series, *Cosmo Faces the Forest of Fear*, is a rhyming story featuring her own golden retriever, Cosmo. It highlights important themes like courage, determination, and friendship. In addition to being an author, she is an associate scientist in R&D at Integra LifeSciences and has B.S. & M.S degrees in biomedical engineering.



Alan R. Van't Land
Colorado Zeta '02

Eternal Light of the Crypts

Alan wrote this historical fiction novel which takes place in 890 AD France focused on the ruins of Charlemagne's Empire. The protagonist is a soldier (Egilolf) whose penance is to recover relics of a forgotten saint. With a refugee scribe, he dodges Vikings, lords, and bandits, not to mention his own lies, to bring the relics to their rightful resting place. Alan is a police officer, U.S. Marine, and has a degree in aeronautical engineering.



TBP FELLOWS

Fellowships have been awarded to 32 members for a year of graduate study in 2023-24.

Sara B. Aboeleneen TN Α '20
Fife No. 243 | Biomedical eng'g

Hrithik Aghav AZ Α '23
Williams No. 44 | Mechanical eng'g

Sarah E. Altman NE Α '23
Sigma Tau No. 49 | Medical eng'g

Rocky An NY Δ '23
Nagel No. 26 | Bioengineering

Kavin Anand CA Γ '23
Spencer No. 68 | Computer science

Zoe I. Barinaga FL Α '23
Fife No. 244 | Artificial Intelligence

Christianos Burlotos IN Γ '18
Matthews No. 26 | Eng'g Sust. Develop.

Giorgia Cannici VA Β '25
Fife No. 242 | Biological Systems eng'g

Jonathan Chen OH Α '21
Tau Beta Pi No. 840 | Bioengineering

Matthew D. Chertok FL Α '23
Dodson No. 10 | Chemical & biol. eng'g

Gavin R. Clausman AL Γ '23
Record No. 40 | Aerospace eng'g

Elizabeth J. Contreras CA Ψ '22
Fife No. 240 | Biomedical eng'g

Andrew C. Couch AL Δ '22
Stark No. 44 | Industrial & sys. eng'g

Daniel A. Dailey KY Α '21
Zimmerman No. 12 | Chemical eng'g

Dominic E. Davis DC Α '23
Record No. 36 | Biomedical eng'g

Catherine M. Della Santina MA Η '20
Fife No. 241 | Biological eng'g

Santiago Diaz-Arauzo TX Α '20
Record No. 39 | Materials Sci. & eng'g

Reese A. Dunne MS Α '22
Centennial No. 38 | Mechanical eng'g

Lauren E. Eccles TN Α '22
Record No. 37 | Chemical eng'g

Antony A. Fuleihan MA Ε '21
Anderson No. 21 | Medicine

Aurora L. Greane IL Γ '22
Tau Beta Pi No. 841 | Biomedical eng'g

Daniel Krashin GA Β '23
Brandt No. 2 | Renewable energy

Emma R. Letourneau NV Β '21
Anderson No. 22 | Mechanical eng'g

Trupti Mahendrakar AZ Δ '18
King No. 62 | Aerospace eng'g

Alana M. Mermin-Bunnell CA Γ '23
Forge No. 11 | Medical eng'g

Victoria N. Messuri OH Λ '23
Record No. 38 | Chem. & biomolec. eng'g

Kester M. Nucum TN Γ '23
Swalin No. 7 | Electrical & comp. eng'g

Savan K. Patel PA Δ '23
Fife No. 239 | Medical eng'g

Aditi Pattabhiraman NY Ι '23
Record No. 41 | Aero & astro. eng'g

Vishwanatha M. Rao NY Α '23
Tau Beta Pi No. 842 | Global affairs & leadership

Benjamin N. Richardson NY Κ '21
Hennis No. 4 | Neural comp. eng'g

Michael D. Walker MD Γ '18
Record No. 42 | Mechanical eng'g

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

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

Given for the 38th 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 Β '30*, who made a gift to the Association in 1998 and 1999.

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

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

The **Hennis Fellowship** is awarded for the 4th time thanks to a generous gift from Lee A. Hennis, *CA Δ '65*, to continue mentoring young engineers.

The **Harold M. King Fellowship,** awarded for the 62nd time, honors the 1954-58 president of ΤΒΠ, Harold M. King, *MA Α 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 Α 1902*, who served as Secretary and Secretary-Treasurer from 1905-47 and as Secretary-Treasurer Emeritus in 1947-78.

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

The Fellowship Board has announced the selection of 32 engineering students from 351 applicants for graduate fellowships. More than $8,600,000 in stipends will have been given by the Society when this 90th group of fellows completes its graduate work. These awards bring the total to 1,799 fellowships since the program began in 1929. The Association is grateful to volunteer members for their role in the selection process; reviewers are listed at ***www.tbp.org/?Fellows***.

Sara Aboeleneen

Fife Fellow No. 243

Sara graduated summa cum laude from the University of Tennessee (UT) in 2020 with a B.S. in biomedical engineering. During her time at UT, she was involved in the campus community in various leadership roles including being Biomedical Engineering Society vice president, Egyptian Student Association president, and an undergrad research and teaching assistant. Sara is now pursuing her Ph.D. in biomedical engineering at the University of Delaware, in the Day Lab for Engineered Nanotherapeutics. Her research focuses on improving the targeting ability of gold nanoparticles to triple-negative breast cancer cells to enable precise photothermal therapy of the tumor. She is passionate about outreach and improving the representation of women and minorities in STEM. Sara currently serves as the outreach chair for the Women in Engineering group, a mentor for first year graduate students and undergrads, ΤΒΠ Baltimore Alumni Chapter vice president, and the webmaster for the Biomedical Engineering Society. Sara plans to pursue a career in the pharmaceutical industry or academia.

Hrithik Aghav

Williams Fellow No. 44

Hrithik is a graduating senior at the University of Arizona with a major in mathematics and a minor in aerospace engineering. He has been working in Prof. Laura Miller's biological fluid dynamics lab in the math department since his sophomore year, researching the aerodynamics of the smallest flying insects using immersed boundary simulations. His work has focused on the role of bristles in tiny insect flight during hovering and forward flapping flight and the effects of stroke deviation on vertical force production in small flying insects. Hrithik was also an undergraduate teaching assistant of vector calculus in his junior year. He will pursue a Ph.D. in mechanical engineering at Stanford University starting in the fall of 2023, concentrating on the computational modeling of multiphase flows. He plans to stay in academia as a professor. Outside academics, he enjoys playing guitar, painting, and reading novels.

Sarah E. Altman

Sigma Tau No. 49

Sarah is graduating as a chancellor's scholar from the University of Nebraska-Lincoln with a B.S. in biological systems engineering and minors in biomedical engineering and mathematics. She is a 2022 ΤΒΠ Scholar and served as the NE Alpha Chapter vice president and secretary her senior year. As an undergrad, Sarah has participated in research through the NIH's IDeA Networks of Biomedical Research Excellence Program, including cancer immunotherapy research at UNMC and drug development research at the Nebraska Center for Virology. Most recently, she has worked under Dr. Gregory Bashford at UNL investigating portable Transcranial Doppler Ultrasound Systems for remote medical monitoring, in particular the improvement of a translation stage for quantifying the acoustic output intensity of transducers. Sarah will pursue a Ph.D. in medical engineering and medical physics at the Harvard-MIT Health Sciences and Technology Program. As an NSF Graduate Research Fellow, she plans to investigate improving image acquisition and reconstruction techniques across MRI modalities.

The **Record Fellowships** commemorate Leroy E. Record, *KS A '29*, whose generous bequest will provide earnings to support awards in perpetuity.

The **Sigma Tau Fellowship**, given for the 49th time, perpetuates the name of Sigma Tau, a national engineering honor society founded at the Univ. of Nebraska in 1904 and merged with Tau Beta Pi in 1974. It also commemorates Sigma Tau's former national president and secretary-treasurer, Clarel B. Mapes.

The **Charles H. Spencer Fellowship** is given for the 68th 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 Fellowship** is 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 ΤΒΠ scholarships and fellowships.

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

The **Edward H. Williams Jr. Fellowship**, awarded for the 44th 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.

Rocky An

Nagel Fellow No. 26

Rocky pursued double majors in mechanical and biological engineering at Cornell University while working in Prof. Clark's parasitology/immunology lab on sexual cell membrane fusion. Freshman year, he modeled bacterial immunotherapies with Cornell's iGEM synthetic biology team and then became a North American Ambassador for iGEM's international competition. He spent summers at NASA and as a Harvard-Amgen Scholar, developing a biological multiphase-CFD package and researching cell-adhesive biomaterial immunotherapies in Prof. Mitragotri's lab at the Wyss Inst. for Bio-Inspired Engineering. Rocky published three first-author papers, one being a sole-author hypothesis/theory paper about spaceflight multiscale mechanoimmunology. He was elected NY Delta Chapter treasurer and scholarship chairman of Beta Theta Pi. Rocky will start a bioengineering Ph.D. at Stanford, with interests in parasite/immune cell eng'g & aspires to be a research leader.

Kavin Anand

Spencer Fellow No. 68

Kavin graduated from Stanford University with a B.S. in computer science and a minor in global studies. He specialized in computer systems, network security, and cryptography. He has engaged in research fellowships with the Stanford Radiology department and completed internships in industry working at Meta and Plaid. Outside of academics, Kavin is involved with Sigma Phi Epsilon and Stanford club tennis. He's had a passion for tennis since childhood, currently serving as the club team president and competing nationally for the school. He also engaged in volunteer efforts with East Palo Alto Tennis and tutoring underprivileged middle schoolers to receive extra academic support. Kavin will continue his master's studies at Stanford and hopes to specialize in Artificial Intelligence with an aim to enter industry as a machine learning engineer working on cutting edge models that push AI in the right direction of utility and accountability.

Zoe I. Barinaga

Fife Fellow No. 244

Zoe is a 2023 biomedical engineering graduate of the University of Florida with a certificate in artificial intelligence (AI) fundamentals and applications on the pre-medical track. Outside of studies, Zoe was involved in multiple organizations as an undergraduate, namely, TBII, Catholic Gators, Dream Team Volunteering, and the Society of Hispanic Professional Engineers. Originally from Houston, TX, she will relocate to Belgium this summer to attend Katholieke Universiteit Leuven for their Advanced Master of Artificial Intelligence. As part of the program, Zoe hopes to complete a research thesis on applications of AI in characterization of neurological disease pathogenesis or diagnosis. She plans to return to the U.S. to pursue medical school with an engineering and computational research focus, and credits her involvement and research experiences as driving factors in her career decision. She's excited to integrate engineering & AI into medicine through a research, clinical practice, and teaching.

Christianos Burlotos

Matthews Fellow No. 26

Christianos graduated magna cum laude from the University of Notre Dame with a B.S. and M.S. in civil engineering in 2018 and 2020, respectively. His graduate research emphasized on the analysis and optimization of concrete homes under seismic loads in Haiti. After graduation, he joined Martin/Martin Consulting Engineers in Denver, CO, and has spent the past two and a half years designing hospitals, clinics, and other healthcare structures. Christianos is a member of the SEI SE 2050 Subcommittee, which works on eliminating embodied carbon in building structures by the year 2050. He also serves as a voting member of the ASCE 7-28 Future Conditions of Environmental Hazards Subcommittee, which is developing guidelines for incorporating the effects of climate change into the building code. This fall, he will be pursuing an MPhil in engineering for sustainable development at the University of Cambridge. After, he plans to pursue a Ph.D. in structural engineering and become a professor who studies and teaches at the intersection of civil eng'g and sustainable development.

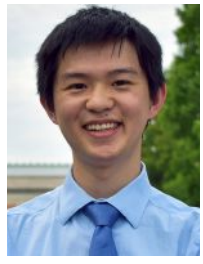
Giorgia Cannici

Fife Fellow No. 242

Giorgia obtained an MSc in architecture from Milan Polytechnic, an MArch II in building ecology from RPI, a Master of Liberal Arts in biology from Harvard, and an MSc in biomedical engineering from Tufts University. She is working towards her Ph.D. in biological systems engineering at Virginia Tech. A registered architect in the European Union, Giorgia has practiced architecture for over a decade with international names such as Zaha Hadid Architects, Foster + Partners, and UNStudio. Her current work focuses on Engineering Living Materials for the built environment. Giorgia believes that bioengineering can provide us with an unprecedented opportunity to redefine the way we design and construct buildings, one of society's most polluting activities, accounting for a significant portion of total global greenhouse gas emissions. She aspires to engender new hybrid professional enterprises and collaborations to accelerate technological advancement and create an interdisciplinary lab where students work together toward the creation of novel, sustainable bioengineered materials for our built environment.

Jonathan Chen

Tau Beta Pi Fellow No. 840



Jonathan graduated summa cum laude from Case Western Reserve University (CWRU) with a B.S. in biomedical engineering. At CWRU, he served as OH Alpha Chapter president and co-founder of CWRU MedWish, a partnership providing medical devices to clinics abroad. He also conducted research in two labs, both in the areas of improving precision medicine for cancer patients. With Dr. Pallavi Tiwari, he used artificial intelligence to identify patient-specific biomarkers in brain tumors and alongside Dr. Amar Desai, he helped develop therapeutics that drive the regeneration of hematopoietic stem cells. Currently, Jonathan is working at the National Institutes of Health with Dr. Adrian Wiestner to identify critical molecular drivers of chronic lymphocytic leukemia and mutational changes that lead to drug resistance. He will be pursuing a Ph.D. in bioengineering at the Univ. of California, Los Angeles, intends to seek a career in academia, and hopes to build his understanding of genomics and cellular therapies to translate new scientific ideas into clinical solutions and technologies for patients.

Matthew D. Chertok

Dodson Fellow No. 10

Matthew is graduating summa cum laude from the University of Florida in 2023 with a B.S. in chemical engineering and a minor in biomolecular eng'g. He was a 2022-23 TBII Scholar, served as FL Alpha Chapter social coordinator and webmaster during the fall 2022 semester, held the treasurer position within UF's AIChE chapter, and was a member of the Engineering Peer Advisors, helping first-year students choose a major and their classes. Matthew conducted research in synthetic biology, where he designed and evaluated a new plasmid in bacteria to co-express a fluorescent protein with a potential therapeutic. Outside academics, he enjoys producing music and playing intramural sports. Matthew will start his Ph.D. in chemical & biological eng'g at Princeton University in fall 2023, where he plans to apply computational methods to design programmable antiviral therapeutics against infectious diseases and wants to bring his research to industry.

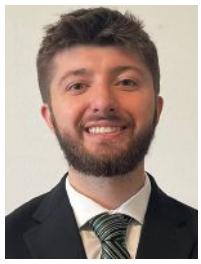
Andrew C. Couch

Stark Fellow No. 44

Andrew graduated from Thomas Edison State University with a B.S.B.A. in general management and a 4.0 GPA in 2018 at the age of 17. Following this, Andrew attended the University of Alabama in Huntsville where he graduated summa cum laude with a B.S. in industrial and systems engineering in 2022 and was named the Industrial and Systems Engineering Outstanding Student of the Year. He graduated with an M.S. in industrial & systems eng'g in 2023. Next, Andrew will pursue a Ph.D. at Stanford University and has been a researcher at the University of Alabama in Huntsville since 2017, his third year of high school. Most notably, his research examines technical tools and methods often involving statistical models, experimentation, and managerial properties to support decision-making in navigating an uncertain world. In 2021, Andrew interned at Dynetics where he performed test engineering activities on long-range hypersonic weapons. In the future, he aspires to pioneer a much closer and more meaningful connection between the world of research and societal benefits for the greater populace.

Gavin R. Clausman

Record Fellow No. 40



Gavin is graduating summa cum laude from the University of Alabama at Birmingham with a B.S. in mechanical engineering and received the Presidential Scholarship and Clayton Reuse Scholarship. Gavin is an active member of Pi Tau Sigma and Phi Kappa Phi. He conducted research on an autonomous off-road vehicle object detection system using lidar technology and later joined a second research group which worked on developing an aerodynamic intelligent morphing system to improve the safety of utility trucks in severe weather conditions. Gavin performed extensive CFD analysis and wind tunnel testing under Dr. Roy Koomullil and the work was published in the 2023 AIAA *SciTech Forum*. He will pursue his master's in aerospace eng'g at Purdue University conducting research to reduce the thermal emissions by using alternative fuel. Gavin plans to work in the aerospace industry with an aim to develop propulsion systems for commercial, military & space applications.

Daniel A. Dailey

Zimmerman Fellow No. 12

Daniel graduated summa cum laude from the University of Kentucky (UK) in 2023, with a B.S. in chemical engineering, minor in mathematics, certificates in environmental engineering and power and energy, and the Scholars in Engineering and Management distinction from the Lewis Honors College. He served as KY Alpha Chapter events chair and vice president, held leadership positions in the AIChE student chapter, served as a mentor to engineering underclassmen, and participated in the Dean's Engineering Leadership Program. His undergrad research focuses included: molecular design and optimization for energy storage materials, engineering undergraduate mental health help-seeking behaviors, and hydrometallurgical extraction of rare earth elements and other critical minerals. He will pursue a Ph.D. in chemical engineering at Columbia Univ. as an NSF Graduate Research Fellow. His career goals are to develop processes and/or technologies to combat climate change, progress sustainable development, and mentor the next generation of scientific leaders as an engineer and an executive.

Elizabeth J. Contreras

Fife Fellow No. 240

Ellie graduated cum laude from the University of California, San Diego (UCSD), in 2022 with a B.S. in bioengineering (biotechnology) and a minor in environmental systems. Initiated into TBII in 2019, she served as CA Psi Chapter bioengineering representative from 2020-22. As an undergrad, she researched optogenetic systems, competed on UCSD's club tennis team, and is a member of Phi Beta Kappa. Ellie is pursuing her Ph.D. in biomedical engineering at Tufts University under the guidance of Prof. David Kaplan. She is passionate about food accessibility and environmental sustainability, which is why her current research concentrates on cellular agriculture: the production of animal-based products from cell cultures rather than directly from animals. Upon completing her doctoral degree, Ellie plans to work in the industry to develop cellular agriculture-based products that are accessible for everyone. Outside the lab, she enjoys cooking, board games, and exploring Boston.

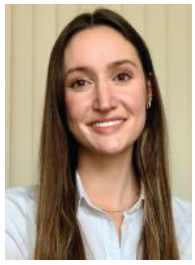
Dominic E. Davis

Record Fellow No. 36

Dominic graduated from Howard University in 2023, summa cum laude, with a B.S. in chemical engineering. This fall, he will attend Johns Hopkins University in the biomedical engineering Ph.D. program and will also be a new member of the Vivien Thomas Scholars Initiative. His research interests lie in the use of biomaterials for tissue engineering and regenerative medicine. At Howard, Dominic is an alumnus of the Karsh STEM Scholars Program, dedicated to increasing minority representation in STEM Ph.D. fields, a mission he will continue to promote through his graduate studies and into his career. Beyond the classroom, Dominic is involved in the Student Association Senate, AIChE, and serving the local community. This past year, he served as DC Alpha Chapter president and the preceding year he served as vice president. After his graduate degree, he plans on either becoming a professor focusing on regenerative medicine or developing a biotech start-up to make affordable biomedical technologies for those in need.

Catherine M. Della Santina

Fife Fellow No. 241



Catherine graduated summa cum laude from Boston University with a B.S. in biomedical engineering with a concentration in nanotechnology. She served as MA Eta Chapter vice president her senior year and joined the biological eng'g Ph.D. program at MIT as a member of the Boyer Lab and Synthetic Neurobiology Group. As an undergrad, she pursued studies in diverse research areas including regenerative immunology, biomaterial mechanics, and computational systems biology. Leveraging these interests, her graduate research will include on developing techniques that alter the spatial and optical properties of cells and tissues to study complex biological processes. Her thesis work aims to build enabling technologies and democratize access to cutting edge molecular tools. Catherine is an active community member dedicated to the creation and stewardship of professional opportunities for underrepresented groups in academia. She hopes to pursue a career combining the practice of eng'g with advocacy for inclusion in STEM fields.

Lauren E. Eccles

Record Fellow No. 37

Lauren graduated summa cum laude from the University of Tennessee with a B.S. in honors chemical & biomolecular engineering and minors in environmental eng'g and leadership studies. She served as TN Alpha Chapter president senior year and service chair junior year. Additionally, she served as AIChE chapter treasurer, a chemical engineering undergrad TA for three courses, and conducted research on ceramic mineral synthesis and characterization in materials science & engineering. She received the Extraordinary Campus Leadership and Service, Volunteer of Distinction Extraordinary Academic Achievement, and Chemical and Biomolecular Engineering Kenneth Elliott Outstanding Senior UTK awards. As a chemical engineering Ph.D. student at the University of Florida, her research focuses on natural silk biopolymer characterization and biomaterial applications in healthcare/medicine. Lauren has been named a Herbert Wertheim College of Engineering Dean's fellow and Southeastern Conference Engineering Dean's fellow and intends to work at a national lab or other research academic institute and to continue mentoring in STEM.

Santiago Diaz-Arauzo

Record Fellow No. 39

Santiago graduated with honors from the University of Texas at Austin with a B.S. in chemical engineering. During his studies, he worked on the chemical equilibria of two-dimensional (2D) heterostructures and their transfer mechanisms under the guidance of Dr. Nanshu Lu. He also served as Texas Alpha Chapter VP and as a teaching assistant for chemical eng'g classes. Outside of studies, Santiago played collegiate soccer for three years. After college, he worked as an engineer at Corning where he built several multi-physics models for their manufacturing processes. Currently, Santiago is a second year Ph.D. student at Northwestern Univ. specializing in materials science & engineering under the supervision of Dr. Mark Hersam. His research is centered around the scalable manufacturing of 2D materials and their use in electronic, semiconducting, and insulating inks. He is an NSF Graduate Research Fellow and former GEM Fellow. In addition to his academic pursuits, he currently serves as VP for Northwestern's Research Program for High Schoolers.

Antony A. Fuleihan

Anderson Fellow No. 21

Antony has a background in mechanical engineering and seeking to apply his engineering skills to clinical areas, he attended Johns Hopkins University to pursue an M.S.E. in bioengineering innovation and design. As a graduate student, he was actively engaged in research on applying the biodesign process to address unmet clinical needs in spine surgery under the mentorship of Dr. Nicholas Theodore and Dr. Youseph Yazdi. Antony's current work centers on personalizing and optimizing spine care through the creation of medical devices that can collect dynamic data and promote holistic patient care. He also serves as an Innovation Fellow at the Center for Bioengineering Innovation and Design where he mentors teams in the biodesign process in a variety of clinical specialties. By combining the principles of engineering, medicine, and innovation, Antony hopes to be able to dedicate his career to improving the gold standard of medical care.

Reese A. Dunne

Centennial Fellow No. 38

Reese is graduating summa cum laude from Mississippi State University (MSU) with a B.S. in mechanical engineering. He has been heavily involved on campus as a Division I student-athlete on MSU's track & field and cross country teams, a tenor in the State Singers Choir, and as MS Alpha Chapter president. In 2016, Reese founded Nonnie's Notes, a 501(c)(3) nonprofit organization that recruits musically inclined students to perform at assisted-living facilities, using music as a therapeutic treatment for Alzheimer's disease and dementia. Additionally, he has participated in various research projects at MSU, Johns Hopkins Univ., and Stanford Univ., leading him to become a Barry Goldwater and Astronaut Scholar, Fulbright U.K. Summer Institute recipient, and a finalist for the Rhodes and Knight-Hennessy Scholarships. Reese will pursue a Ph.D. in mechanical eng'g at Stanford as a Stanford Graduate Fellow and an NSF Graduate Research Fellow, hoping to utilize medical imaging to research and ultimately treat Alzheimer's.

Aurora L. Greane

Tau Beta Pi Fellow No. 841

Aurora graduated from Northwestern University with a B.S. in biomedical engineering and a B.M. in violin performance. She completed her honors research thesis on the application of bioelectronic mechanoacoustic sensors to prevent vocal fatigue in opera singers. Her unique collaboration with the Querrey Simpson Institute for Bioelectronics and the Bienen School of Music speaks to the interdisciplinary nature of Aurora's academic interests. In her second year at Northwestern, Aurora discovered a passion for engineering education with an emphasis on teaching methods and DEI issues. As Illinois Gamma Chapter president, Aurora organized a STEM exploration event for local middle-school students from underserved communities. With the support of this Fellowship award, Aurora will begin a joint Ph.D. program in biomedical engineering at the Georgia Institute of Technology and Emory University. Her aspiration is to become a professor of instruction in biomedical engineering dedicated to supporting students throughout their engineering education and careers.

Daniel Krashin

Brandt Fellow No. 2

Daniel recently graduated from Mercer University with a B.S. in electrical engineering, where he excelled as a scholar, athlete, and researcher. He served as Georgia Beta Chapter president and treasurer, played on the Mercer Men's Tennis Team, and worked as a teaching assistant for the circuits lab. As a researcher in Dr. Sarvestani's Polymer Mechanics Lab, Daniel worked on developing sustainable and intelligent coating materials for aerospace structures. His notable achievements at Mercer include receiving the SoCon Commissioner's Medal, SAME Scholarship, and being named the top class of 2023 Mercer graduate in electrical eng'g. Since May 2022, Daniel has been working at Cisco Systems on the Board Mount Power team, where he has contributed to solving semiconductor shortage issues while improving power efficiency across multiple products. This fall, he will pursue an M.S. in sustainable design & construction at Stanford University. His career goal is to increase access to Zero Net Energy structures while reducing greenhouse gas.

Alana M. Mermin-Bunnell

Forge Fellow No. 11

Alana is graduating from Stanford University with a B.S. in bioengineering with honors in June 2023. Next year, she will pursue a Ph.D. in medical engineering through the Harvard-MIT HST Program. During her time at Stanford, Alana developed an ultra-low-cost multimaterial 3D bioprinter and served as the undergraduate coordinator for the Women's Community Center STEM mentorship program. She also spent a summer working at the NIH through BESIP developing biofabricated skin, is a 2023 NSF Graduate Research Fellowship Awardee, and 2022 Goldwater Scholar. In graduate school and beyond, Alana hopes to concentrate on integrating biology and biofabrication in translation-focused projects in order to reduce morbidity and mortality globally. She also hopes to continue engaging in mentorship and inclusion efforts for marginalized students in STEM.

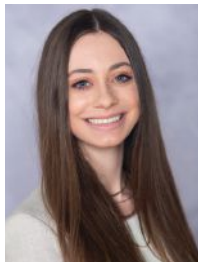
Emma R. Letourneau

Anderson Fellow No. 22

Emma graduated summa cum laude from the University of Nevada, Las Vegas (UNLV), with a B.S. in mechanical engineering and minors in solar/renewable energy and mathematics. As an undergrad, she participated in activities that reflect her passion for energy and water sustainability. These include building a net-zero solar house as a member of UNLV's Mojave Bloom team in the U.S. DOE's Solar Decathlon, and as a researcher studying hydrophilicity measurement techniques for carbonaceous materials used in water treatment. Emma participated in internships at the Clark County Water Reclamation District and Brookhaven National Lab. Outside of academics, she served as NV Beta Chapter vice president and as project coordinator for her Engineers Without Borders chapter. She is pursuing an M.S. in mechanical eng'g at UNLV under Dr. Jaeyun Moon, studying physical and chemical modifications to carbonaceous water/air filtration materials to improve their carbon capture potential. Emma hopes to become a researcher improving clean energy.

Victoria N. Messuri

Record Fellow No. 38



Victoria graduated summa cum laude with honors from Youngstown State University with a B.S. in biochemistry, B.E. in chemical engineering, and a mathematics minor. She served as OH Lambda Chapter vice president and VP of American Institute of Chemical Engineers, secretary of the Society of Women Engineers, and historian of Pi Mu Epsilon. Victoria was a member of YSU's Chem-E Car team and a research assistant for two years under Dr. Byung-Wook Park, where she was a NASA OSGC scholar. Her research project involved the synthesis and design of a hydrogel for application to a smart wound dressing that could release a drug on demand. She will be pursuing her Ph.D. in chemical & biomolecular engineering at Rice Univ., where she was awarded the Dean's Prize, beginning August 2023. Victoria hopes to use engineering approaches to make advancements in medicine, especially focusing on cancer immunotherapy. She hopes to continue to study incurable diseases and pharmaceuticals after graduate studies, and one day become a research mentor to passionate students.

Trupti Mahendrakar

King Fellow No. 62

Trupti completed her bachelor of science in aerospace engineering with a focus in astronautics from Embry-Riddle Aeronautical University (AZ) in 2019. During her studies, she interned at the National Aerospace Labs in Bangalore, India, and Aptus Engineering Inc. Next, she worked full-time as an avionics component engineer at Delta Air Lines. She later earned a master's in aerospace eng'g from the Florida Institute of Technology in 2021. Trupti is currently a Ph.D. candidate in aerospace eng'g and works part-time as a systems engineer intern at Collins Aerospace on the Iridium NXT program. Her doctoral research aims to enable AI-based techniques to detect non-cooperative spacecraft for autonomous on-orbit servicing with small satellites. Trupti is also the student director of the ORION research lab, a researcher at the Autonomy lab and NETS lab, and a core member of Technetium Engineering LLC. After completing her Ph.D., Trupti plans to continue working on engineering solutions for on-orbit servicing, debris removal, and Space Domain Awareness.

Kester M. Nucum

Swalin Fellow No. 7

Kester graduated summa cum laude from Tennessee Technological University with a B.S. in computer engineering and minors in music performance and honors. He served as TN Gamma Chapter president, University Catholic president, Rural Reimagined Club president, Center for Career Development ambassador, and honors program ambassador. Kester is the 2023 Derryberry Award recipient, Tech's highest student honor. He spent two summers interning at Dynetics working in modeling and simulation of foreign weapon threat systems and interned at Radiance Technologies working in reverse engineering this summer. An avid musician, he played violin as concertmaster of Tech's Orchestra and sang as a cantor at St. Thomas Aquinas Parish. His internships and passion for music influenced his research interests in artificial intelligence and digital signal processing, with applications in radar and RF technology. Kester will pursue an M.S. in electrical & computer eng'g at Mississippi State Univ. and will perform research under Dr. John Ball and hopes to advance R&D of AI, DSP, and radar in the defense industry.

Savan K. Patel

Fife Fellow No. 239

Savan is a senior studying bioengineering and finance at the University of Pennsylvania in the Jerome Fisher Management and Technology dual degree program. For the past four years, he has conducted drug delivery research in the lab of Prof. Michael Mitchell. His work centered on lipid nanoparticles and mRNA delivery to immune cells. At Penn, he was a member of the Penn Undergraduate Biotech Society and Science Olympiad. Along with his friend, Adarsh Rao, he founded a medical device startup aiming to develop an early detection system for deep vein thrombosis. In the future, he will be pursuing his Ph.D. in medical engineering and medical physics at the Harvard-MIT Health Sciences and Technology program where he hopes to continue working on cutting edge drug delivery research and develop novel immunotherapies.

Aditi Pattabhiraman

Record Fellow No. 41

Aditi graduated with honors from The Cooper Union For the Advancement of Art and Science, earning her B.E. in mechanical engineering with a minor in computer science. She received several undergraduate awards, including the IDC Fellowship for her research into energy optimization in Cooper Union's academic building, advised by Prof. Melody Baglione. Aditi's paper on related research will be presented at the ASHRAE Conference in June. Her passion for interdisciplinary research led her to join Prof. Alice Pisani's team at Flatiron Institute Center for Computational Astrophysics, where she is designing an elevation drive for the HIRAX project. She honed her leadership and mentoring skills as an engineering writing tutor and collegiate chapter president of the NY Iota and ASME chapters. This fall, she will begin a master of science in aeronautics and astronautics eng'g at Stanford Univ., researching multi-robot systems and controls. She plans to contribute to the rapidly-evolving field of robotics/AI for exploration of inaccessible and unknown environments.

Vishwanatha M. Rao

Tau Beta Pi Fellow No. 842

Vishwanatha is graduating with honors from Columbia University with a B.S. in biomedical engineering. He has co-authored seven peer-reviewed publications, fourteen posters/presentations and has led several impactful research projects in clinical informatics and medical device development, with a specific focus on medical AI. He has also published two first author research articles, with one featuring a novel deep learning segmentation architecture. Outside of research, Vish is currently the transfer student representative for Columbia Engineering Student Council and previously served as the class president and technology representative. Through Engineering Without Borders, he led the water team to extend potable water access for a community in Ghana. He also serves as NY Alpha Chapter vice president, executive committee member of the Biomedical Engineering Society, and dancer on Columbia RAAS. In the future, Vish aims to lead an academic research lab at a hospital, specifically addressing on advancing medical AI techniques and their implementation in clinical practice.

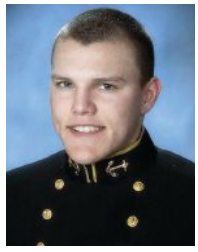
Benjamin N. Richardson

Hennis Fellow No. 4

Ben graduated magna cum laude from the Univ. of Rochester with a B.S. in biomedical engineering in 2021. As an undergrad, he conducted research on tone-in-noise detection in human listeners and the properties of the auditory midbrain. He also participated in research developing an auditory nerve implant at the Univ. of Minnesota, using virtual reality to understand how vision and hearing interact. As a Ph.D. student in neural computation at Carnegie Mellon, he conducts research on the mechanisms of spatial auditory attention using non-invasive brain imaging. Ben hopes to use his research to engineer new strategies for assistive hearing devices, and to further understanding of conditions such as Autism Spectrum Disorder (ADHD). He is also looking forward to community partnerships with schools for the hearing impaired and autism support organizations in Pittsburgh, and is passionate about bringing accessible brain imaging to communities where it can be most impactful. Ben plans to pursue post-doctoral opportunities in hearing research and assistive hearing device engineering.

Michael D. Walker, P.E.

Record Fellow No. 42



Michael is an incoming Ph.D. student at Princeton University, where he will join the Computational Turbulent Reacting Flow Laboratory in the department of mechanical and aerospace engineering. He is a submarine officer in the U.S. Navy, and currently serves as an operations officer for Submarine Squadron 12 in New London, CT, where he coordinates the schedule, training, maintenance, and certification of 11 operational submarines for worldwide deployment. He is a distinguished graduate of the U.S. Naval Academy class of 2018, with a B.S. in mechanical eng'g. He holds an MPhil in fluid mechanics from the University of Cambridge, as a Churchill Scholar, and is a graduate of the Naval nuclear propulsion program. His research interests are in undersea warfare, deterrence, and aero and fluid dynamics. He has previously worked as an analyst at the Institute for Defense Analyses and a research associate at Lawrence Livermore and Sandia National Labs. He is a licensed Professional Engineer and a native of College Station, TX.

The STORY BEHIND The PHOTO

Announcing the Summer 2023 "Caption This Photo" Contest!

Toto, I've a feeling we are back in Kansas again! The Summer contest image at right, was taken at the 1998 Convention in Manhattan, KS. It is most likely a scene from the Resolutions Committee's final skit at the closing banquet.

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 ΤΒΠ 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: TUESDAY, AUGUST 1, 2023 5 P.M. (ET)

Questions? Contact *p.mcdaniel@tbp.org*

WINNERS of the Spring 2023 "Caption This Photo" Contest:

This image was a popular one with the contestants! The judges reviewed 75 captions that HQ received from 35 members for the Spring 2023 contest. You can read all entries, including captions and results from recent contests, at: ***tbp.org/pubs/captionContest.cfm*.**

1ST PLACE:

"Whatever the challenge, a Tau Bate will always arrive at the most interesting solution."

Michael Ustes, *MI I '22*

2ND PLACE: TIE

"And this is what a sine wave looks like."

Samuel I. Patterson, *MO B '24*

2ND PLACE: TIE

"The diving competition was subsequently moved to the pool."

Anonymous Member (please identify yourself!)

3RD PLACE:

"Some members take their games very seriously. The word here for the TBP game of charades was: Hypotenuse."

Kristel Velez, *NY H '20*

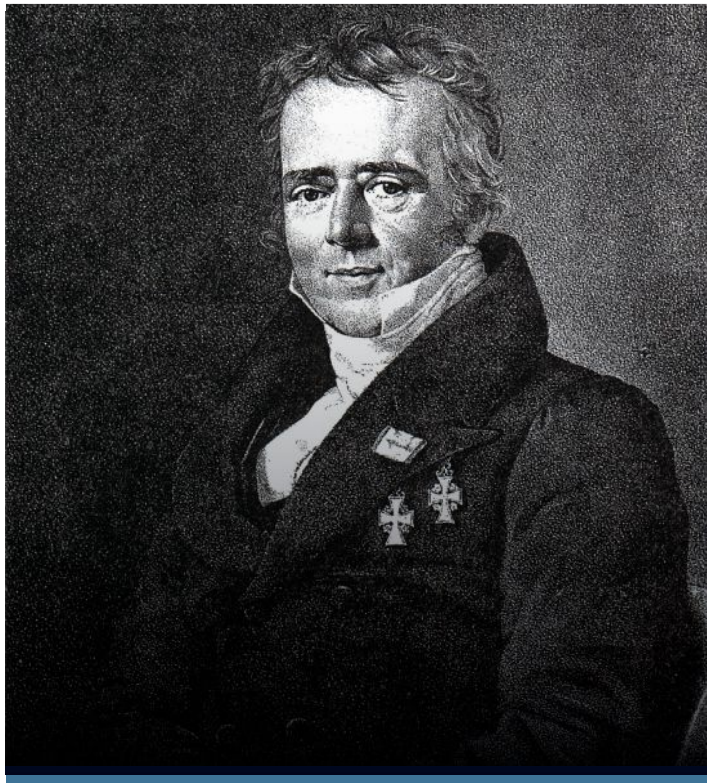
▲ The Spring 2023 contest image (above) was taken at the 1998 Convention in Manhattan, KS. Here we have a member demonstrating "The Worm" during the ice-breaker portion of a District Meeting.

CONGRATULATIONS TO OUR WINNERS!

THIS IS THE THIRTEENTH 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 AN...

OERSTED

Back when I was doing useful work — i. e., teaching — I would often start a class by giving a short quiz. Let's do that to introduce today's subject.

Fill in the blank: Hans Christian _____ was a famous 19th century Dane. I would wager that if you did not take a clue from the title of this article, you would answer "Andersen." And you would be correct. Hans Christian Andersen was a beloved storyteller whose fables and fairy tales are still popular with children and adults throughout the world. But there is another Hans Christian whose fame may be less universal but whose impact — or at least the impact of his discovery — is even more far reaching: Hans Christian Oersted.

To honor Oersted, the unit of magnetic field intensity in the centimeter — gram — second (CGS) system has been named the oersted, abbreviated Oe. Since the CGS system is little used today, the oersted is seldom seen in the technical literature, but the fame of its namesake is not diminished.

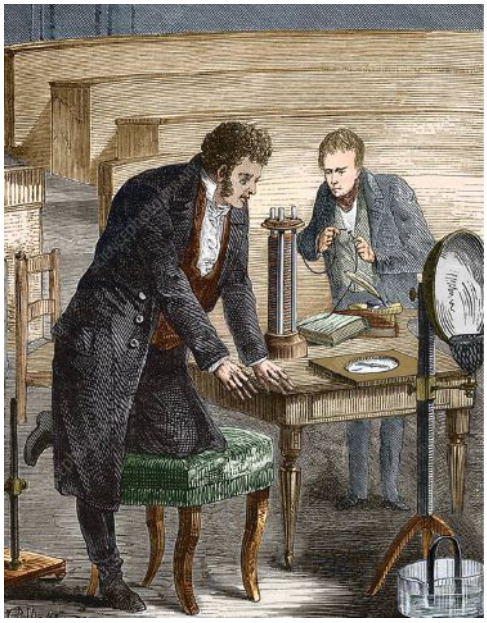
Hans Christian Oersted (spelled Ørsted, using the Danish alphabet) was born on August 14, 1777, in the town of Rudkøbing, Denmark, on the island of Langeland. Rudkøbing is still a thriving town of about 4,500 and boasts a fine statue of H.C. Oersted in the town square. The family did not have enough money to send Hans and his brother Anders to a formal school, so they were educated at home by their parents and various tutors. In 1793, at the age of 16, Hans enrolled in the University of Copenhagen to study science with the goal of becoming an apothecary like his father. His interests soon broadened, however, and he won various honors. He received a degree in pharmacology in 1796 and his doctorate in 1799 at the age of 22. In 1801, he received a grant that funded three years of travel around Europe to visit the various scientific laboratories. In 1806, his travels completed, he was appointed professor at the Univ. of Copenhagen. The stage was now set for his great discovery.

Today, when we consider electricity, we usually think of electrons flowing and the variables of voltage and current. Before 1800, however, the term meant what we today call *static* electricity. Any flow of charge was almost instantaneous,

occurring when a Leyden jar discharged with a flash and a bang. This changed in 1800 when Alessandro Volta invented what came to be known as the voltaic pile or battery, a source of continuous flow of what we now call electrons. All kinds of experiments were now possible. For instance, passing this newly available current through a thin platinum wire heated the wire to luminescence and demonstrated a connection between electricity and heat and light. *Hmmm*. Could there also be a connection between electricity and magnetism? It would certainly seem reasonable. Incredibly, scientists searched for that connection for *twenty years* before it was found. By whom? By none other than our hero, Hans Christian Oersted.

There had been a few examples of experiments that suggested electricity and magnetism might somehow be related. Benjamin Franklin, among others, observed that steel needles sometimes became magnetized when they were in the vicinity of an electrostatic discharge. But no one succeeded in generalizing the observation or systematically conducting a repeatable experiment. Until Oersted.

Some say that Oersted was actively looking for the electricity/magnetism connection and designed an experiment to test a theory he had developed. It is also possible — and often accepted — that his discovery was entirely accidental. In any case, on a spring day in 1820, Oersted and an assistant were conducting a demonstration as part of a lecture to Oersted's students when they made a historic observation. Whatever phenomenon they were demonstrating, the experiment involved opening and closing a connection to a voltaic pile, thereby creating an intermittent flow of current. By accident or by design, a compass had been placed near the wire. When the current was turned on, Oersted observed that the needle of the compass moved from its magnetic North position. When the current was turned off, the needle returned to its equilibrium direction. When the current was reversed, the needle moved in the opposite direction. Clearly — at least it is clear to us now — the electric current was causing a magnetic effect. The long-sought connection between electricity and magnetism had been found.



Oersted discovering electromagnetism.

When scientists make a discovery, they have a natural inclination to announce it to the world immediately, before someone else beats them to it. Oersted must have felt the same way, but he also knew there was much more to be learned about the phenomenon and wanted to be dead sure of his results before he published. Oersted spent the early summer of 1820 conducting a series of careful experiments verifying his observations and precisely describing the magnetic effect of a current-carrying wire. By July, convinced of the validity of his experiments, he published a paper that was widely read and greeted with considerable excitement.

The scientific world was electrified — both literally and figuratively. It took twenty years from the invention of the voltaic pile to the discovery of electromagnetism, but within weeks after that discovery, scientists throughout Europe were repeating Oersted's experiment and extending knowledge of the phenomenon. In September, André-Marie Ampère (1775 – 1836) made the astounding discovery that two current-carrying wires would either repel or attract each other, depending upon the direction of the current. Other scientists started designing rudimentary telegraphs based on electromagnetism and soon, some were starting to dream of using the phenomenon to create motive power. Both efforts were eventually richly rewarded.

Oersted is known primarily for his discovery of electromagnetism, but also made other scientific contributions. In 1824, he became the first person to isolate aluminum and reported the development but apparently didn't think the metal would find much use.

Oersted was also an inspiring organizer, founding organizations that eventually became the Danish Meteorological Institute, the Danish Patent and Trademark Office, and the Technical University of Denmark. And he was not the only talented one in the Oersted family; his younger brother Anders was a lawyer and politician who served as prime minister of Denmark in 1853-54.

On the personal side, the two Hans Christians — Oersted and Andersen — were very close friends, even though Andersen was some thirty years younger. At the tender age of 14, Andersen had come to Copenhagen to seek his fortune and had the audacity to call on Oersted who was already famous. Oersted and his family liked the young man, helped him with contacts and recommendations, and integrated him into their family. For many years, Andersen dined regularly with the Oersteds and celebrated holidays with them. He may even have courted Sophie, one of the Oersted daughters. Andersen referred to his friend and mentor as "great Hans Christian" and himself as "little Hans Christian," a reference to their fame and not to their stature.

So, dear reader, the next time you are asked to name a famous Dane with the given names of Hans Christian, I hope you will remember Hans Christian Oersted as well as his friend Hans Christian Andersen. Oersted is famous for his discovery of electromagnetism and his contribution to the definition of magnetic fields. And that's why we call an oersted an oersted.

BRAIN TICKLERS

Results From Winter

Perfect Scores

*Gibbs, Kenneth P.	MO	Γ	'76
*Holcomb, J. Eric	OH	A	'82
*Kimsey, David B.	AL	A	'71
*Kuhn, Walter A.	OH	A	'81
*Roche, James R.	IN	Γ	'85
Schwam, Susan E.	WA	A	'88
Schwam, Freely	Spouse of member		
*Sisco, Michael D.	WI	A	'91
*Upshur, John I.	VA	A	'83

Other

Berthold, Kristopher D.	TX	B	'04
Bertrand, Richard M.	WI	B	'73
Budd, Christopher M.	AZ	B	'94
Chatcavage, Edward F.	PA	B	'80
Couillard, J. Greg	IL	A	'89
Golemme, Steven S.	IL	A	'20
Grewal, Kalwant S.	TX	H	'73
*Griggs Jr., James L.	OH	A	'56
*Harvey, Arthur J.	OH	A	'83
Kirschman, Randall K.	CA	A	'66
Lalinsky, Mark A.	MI	Γ	'77
*Norris, Thomas G.	OK	A	'56
Pendleton III, Winston K.	MI	Γ	'62
Schmidt, V. Hugo	WA	B	'51
*Slegel, Timothy J.	PA	A	'80
Slegel, Craig M.	Son of member		
*Spong, Robert N.	UT	A	'58
Spring, Gary S.	MA	Z	'82
Summerfield, Steven L.	MO	Γ	'85
Tellechea, Gabriel	TX	A	'87
Tso, Robert	CA	E	'80
Van Dillen, David E.	NJ	B	'67
*Voellinger, Edward	Non-member		

*Denotes correct bonus solution

Winter Review

In the winter problems:

Number 4 (volleyball) was the most missed problem with around 1/3 of the answers being wrong.

In the next most missed problem, number 2 (chess rooks), around 1/4 of the answers were wrong.

The easiest problem, number 3 (football kicker), only had one wrong answer submitted.

Spring Answers

1: SEVEN + SEVEN + SIX = TWENTY is **68782 + 68782 + 650 = 138214**. Let's label the columns 5 through 0 going from left to right and identify the carry into column *N* as c_N. We can immediately show that *t* must be 1 and that *N* cannot be 0 or 5.

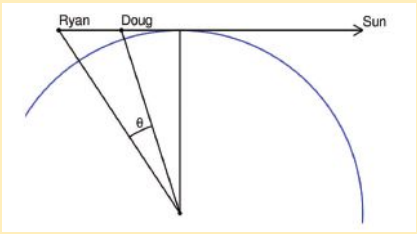
Based on column 3, (c_3,e,c_4) must be (0,0,0), (1,9,1) or (2,8,1). We can show that c3 cannot equal 0 and, therefore, eliminate the first candidate.

The candidates for (s,w) are (6,3), (7,5), and (8,7). Given that two is prime, we have three possibilities:

- s = 6, two = 137
- s = 6, two = 139
- s = 8, two = 173

Constraints on the remaining letters eventually lead us to the unique answer given above.

2: **12,800 km** (very close to the actual diameter of 12,756 km!)



Let α represent the time between the brothers' observations as a fraction of a solar day.

$$\alpha = \frac{26 \text{ seconds}}{86400 \text{ seconds}}, \quad \theta = 2\pi * \alpha$$

The relationship between θ, the Earth's radius (RE), Ryan's height above sea level (HR) and Doug's height above sea level (HD) is

$$Cos^{-1}\left(\frac{RE}{RE+HD}\right) + \theta = Cos^{-1}\left(\frac{RE}{RE+HR}\right)$$

3: 271,569,351 / 45,023,650 ≈ **6.03** cards are drawn on average. There are multiple ways to approach a problem like this. One interesting way is to treat the problem as an absorbing Markov chain where the states represent the number of cards of each suit drawn. The transient states are those in which we have less than three of each suit. The absorbing states are those in which we have three of one suit.

4:

$$x = \frac{\sqrt{2}}{8} * \left[\frac{3\pi}{2} + \ln\left(\frac{3}{2} + \sqrt{2}\right)\right] \cong 1.02212$$

$$y = \frac{\sqrt{2}}{8} * \left[\frac{3\pi}{2} + \ln(6 - 4 * \sqrt{2})\right] \cong 0.64396$$

The final position on the spiral is the sum of the movements to the east plus the sum of the movements to the northeast, etc. The sums of the movements in each individual direction are divergent but, interestingly, the overall sum is convergent. In fact, the sum of the east & west movements together is convergent as is the sum of the northeast & southwest movements, etc.

5: **0.807946** Let the radius of the cat food can be 1 and the distance between cylinder centers be *d*. We need to find *d* such that:

$$2 * \left[Cos^{-1}\left(\frac{d}{2}\right) - \left(\frac{d}{2}\right) * \sqrt{1 - \left(\frac{d}{2}\right)^2}\right] = \frac{\pi}{2}$$

Solving numerically gives the distance noted above.

BONUS:

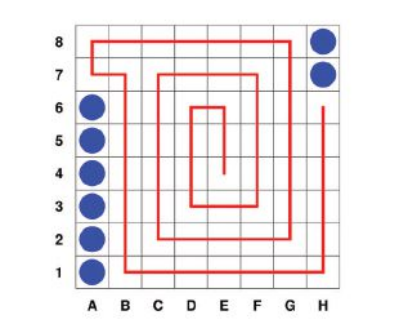
2,858 In each block of 21 numbers, there are 6 for which (2^N mod 7) equals (N^2 mod 7). There are 476 blocks of 21 numbers through 9996 giving us 476 * 6 = 2856 numbers for which $2^N - N^2$ is divisible by 7. $2^N - N^2$ is also divisible by 7 for N = 9998 and 10000 giving the total instances listed above.

COMPUTER BONUS:

The optimal path visiting all squares has **15 legs.**

There are no such optimal paths starting in **rows 5, 7, or 8.**

An example optimal, 15 leg path starting at square H6 follows.



New Summer Problems

1: Colors of the Rainbow

The twins like puzzles. In fact, in their bookcase, they have seven puzzle books, each titled with a color of the rainbow: *The Red Puzzle Book* right through the rainbow to *The Violet Puzzle Book*. However, for reasons unknown, with the exception of *The Green Puzzle Book*, the binding color of each book does not match the title color. Alice likes to arrange the books in rainbow order by title color, which mixes up the order of the binding colors. When Alice isn't looking, Bill arranges the books in rainbow order by binding color. After his rearrangement, Bill observed that the *title* colors were in the same order as the *binding* colors were before he rearranged them. Furthermore, no pair of books that were beside each other in the old arrangement remained side by side in the new arrangement. Match the binding color with the title color for the seven books. Assume that the colors of the rainbow are red, orange, yellow, green, blue, indigo, and violet, in order. Express your answer as the order of the title colors when the binding colors are in rainbow order?

—*Tantalizers* by Martin Hollis

2: What Lies Between

If all that is known about x is that it lies between 9 and 11, what is the best guess for the value of x to minimize the percentage error, that is to minimize the absolute value of $(x_{estimate} - x_{exact}) / x_{exact}$?

—*Peerless Probability Problems and Other Puzzles* by Ivan Moscovich

3: Shining Light

Suppose a type of glass is such that, for any incoming light: 70 percent of light shining from one side is transmitted through to the other side; 20 percent of the light is reflected (off of the outer surface) back in the direction from which it came; the remaining 10 percent is absorbed in the glass. How much of an original light source will be transmitted through three panes of glass? It is assumed that the panes are parallel and at a small distance from each other. Ignore any loss of light above or below the panes (which is the same as assuming the panes extend infinitely in all four directions). Express your answer as a ratio of integers.

—*Bicycle or Unicycle? A Collection of Intriguing Mathematical Puzzles* by Dan Velleman and Stan Wagon

4: Christmas in July

It was only a few days until Christmas, and Santa was dreading all the stockings he would have to fill. That night, he had a strange dream. As he sat staring at a huge pile of socks of seven different colors (azure, beige, cabernet, daffodil, ecru, fuschia, and gold), the Ghost of Christmas Past appeared and said, "If you were to pick two socks at random, the odds are 50:50 that you would get a matched pair." He then waved his hand and all the gold socks vanished, but the Ghost stated that the odds of getting a matched pair were still 50:50. He waved his hand again, and the fuschia socks vanished, but again he stated that the odds were still 50:50. In turn, he made the ecru, daffodil, and cabernet socks vanish, but in each case he said the odds of a matched pair remained at 50:50. At this point, Santa counted the remaining socks and found that he had 25 left. He asked the Ghost how many socks he had made vanish. The Ghost replied, "All I'll tell you is that it is a multiple of the original number of socks of your favorite color." What is Santa's favorite color and how many socks did the Ghost make vanish?

—An Enigma by Colin Singleton in *New Scientist*

5: Rotated Integer

The six-digit number, 142857, has the interesting property that if it is multiplied by 1, 2, 3, 4, 5, or 6, the result is a rotated version of the original number. Find another integer X, longer than six digits (but leading zeros allowed) having the property that multiplication by any positive integer not exceeding the number of digits of X produces a rotated version of X.

—*Technology Review*

BTs continue on page 31.

FEBRUARY 1 — APRIL 30, 2023

Alumni Giving

New 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 2,604 TAU BETA PI ALUMNI and others who made donations to the Association totaling $420,060 between February 1, 2023, and April 30, 2023. Gifts received after April 30 do not appear here but will be published in the Fall 2023 issue. These club names and amounts, updated by the ΤΒΠ Executive Council in 2021, are set at the following levels:

$1 MILLION+
Williams Club

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

$500,000+
Heikes Club

Irving A. Heikes, *PA A 1885*
1st student member

$250,000+
Harelson Club

Katharine C. Harelson, *KY A 1924*
1st Women's Badge (WB) recipient

$100,000+
Matthews Club

R.C. "Red" Matthews, *IL A 1902*
1st Sec.-Treasurer of ΤΒΠ

$50,000+
Franklin Club

Marjorie A.H. Franklin, *KS A 1957*
1st woman initiated into Sigma Tau

$25,000+
Nagel Club

Robert H. Nagel, P.E., *NY D 1939*
2nd Sec.-Treasurer of ΤΒΠ

$10,000+
Clarke Club

Edith Clarke, WB #95
Inventor of graphic calculator

$5,000+
Evans Club

Henry B. Evans, Ph.D., *PA A 1893*
1st president of Tau Beta Pi

$2,500+
Eaves Club

Elsie Eaves, *CO B 1920*, WB #24
Influential civil engineer

$1,000+
Downing Club

Lewis K. Downing, *MI G 1921*
1st Black HBCU engr. dean

$500+
Moore Club

A.D. Moore, *PA G 1915*, ΤΒΠ president, Fellowship Program founder

$250+
Forman Club

George W. Forman, *IL A 1941*
Led ΤΒΠ/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.

Nagel Club
Bob E. DeHart II, P.E.
WV B '72
I support ΤΒΠ to honor future engineers in leading our country forward.

Nagel Club
Bobby S. Shackouls
MS A '72
We are going to need a lot of good engineers for a longtime to come!

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 due to rising print costs of 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.

$1 MILLION+ Williams Club

No alumni gifts for this quarter

$500,000+ Heikes Club

No alumni gifts for this quarter

$250,000+ Harelson Club

VA A White, Dudley '76

$100,000+ Matthews Club

MO B Jinkerson, Ken R. '75
NY Δ Wright, Peter A. '75

$50,000+ Franklin Club

SPEC Zeigler-Lyons, Nancy '00
CA Γ †Levin, Robert Edmond '53
LA Γ Anonymous '67
MD B Farmer, Nick Arthur '68
MI E Schmuhl, John Curtis '71
OH H Merkle, Larry '92
RI B Anonymous '81

$25,000+ Nagel Club

IN A Clements, David '80
Newcomb, Robert Wayne '55
IN E Dausman, Alan Vernon '77
MA B Anonymous '67
MI A Colbry, Dirk Joel '06
Colbry, Katy Luchini '99
MS A Shackouls, Bobby Stone '72
NY K Rudin, Murray Edward '83
OH A Ferencz, Robert Mark '80
PA Λ Anonymous '90
RI B Keddie, William Joseph '59
WV B DeHart II, Bob Elwood '72

$10,000+ Clarke Club

SPEC Anonymous
AK A Stella, Damien F. '82
CA A Cocotis, Paul Alexander '90
Masatani, Peter James '04
CA E Case, Dan Keyte '87
CA Λ Holl, Sue '76
CA Ξ Boyd, Robert Alan '74
CA Y Idenmill, Ethan Matthew '04
DE A Sharp III, Rodney '60
FL A Biasco, James Randal '78
Uhler, Robert Bruce '74
FL B Robert, Raymond W. '66
IL B Clewett, Thomas Alan '88
IL Γ Gross, Rick Charles '80
IN A Ricks, Steve Wayne '63
IA A Burmeister, Jon Barth '68
Peterson, Mike Laurel '89
LA Γ Baldwin Jr., George Alexander '78
LA E Champagne Jr., Pierre '76
MA Δ Lee, Dick G. '51
MA H Sin, Chi-Kai '88
MA Γ Tielking, Tom '62
MN A Stanley, Steven F. '84
NM B Modrall, David Righter '91
Williams, Jim Calvin '76
NY E Maniscalco, Thomas Louis '67
NY Ξ Denning, Peter James '64
OH A Rasbold, Chuck Charles '83
PA Δ Harker, Pat Timothy '81
PA Λ Schuler, Joseph J. '80
TN A Cook, James Michael '72
King III, Phil Woodson '66
TX A Adamo, Paul Magness '85
Mickelson, Kent Burdell '77
TX Δ Sisney, Steven Lynn '83
UT A Endo, Thomas Minoru '62
WV B Payne, Michael E. '81
WY A Steadman, John W. '64
Steadman, Sally Jean '69

$5,000+ Evans Club

AL A Griffith, Gordon Harvey '57
Stone, Jeffrey Ira '79
AL Δ Fogle, Frank Risher '80
AL E Pierre Jr., Steve '90
AK A Gaddis, BL '73
AZ B Berry, John Bradley '89
CA A Ikeda, Kenneth Akira '62
CA Γ Fowle, Mark C. '76
CA E Burnett, James William '72
CA H Battersby, Les Charles '98
CA N Erickson, Ralph Edward '71
Lytle, Scott K. '86
CA Y Alexander, Joseph William '06
Alexander, Rachel Kristin '15
Mukhar, Marwan John '93
DE A Gardiner Jr., Francis Espey '62
DC B Walsh, Bryan Patrick '97
FL A Lewis, Becky Ann '04
Shacter, Phil '79
Vice, William Eugene '70
GA A Jenkins, William Craig '68
IL A Wait, Jay Jenner '71
IL B Bernhardt, John Edward '89
IL Γ Ayres, Rick Owen '79
IL E McElrath, Pamela S. '92
IN A Hale, Dave Charles '59
Ihlenfeld, Jay Vining '74
Palas, Richard Francis '65
IN Γ Jackewicz Jr., Joseph Ignatius '75
IA A Ask, Andy C. '64
KS A Powell, Rick Steven '80
LA Γ Mohr, James Donald '55
LA Δ Blaylock, Martin Edward '61
ME A Bragdon, Reginald Glenwood '93
Hamilton, Wayne Andrew '58
Johnson, Christine Elizabeth '82
MA B Dettmer, Robert Gerhart '55
Giaimo III, Edward Charles '74
MA Z Grzeslak, Kazimierz T. '88
Lewis, Nelson David '73
MI Γ Halverson, Mark Wayne '72
Hopping, William Daniel '71
MI Δ Cook, Cliff Carroll '69
Rose, Jonathan Douglas '81
Stanczak, John Stephen '70
MI H Hock, Darryl Allen '81
MI Θ Pivitt, Barry Robert '88
MS A Benton, William Dan '71
Nelms, Larry Thomas '63
MS B Senften, Theodore Merritt '70
MO B Elliott, Joseph Oscar '71
MT A Carlson, Gene Stewart '64
NJ A Skowronski, Victor J. '71
NY A Elwell, Bill Edward '78
NY B Newman, Michael '84

Alumni Giving

Evans Club continued

NY Δ Altschuler, Stan Jon '63
NY E Freier, Otto Albert '70
NY H Butterman, Heidi Carol '79
NY K Muller-Girard, Otto Theodore '52
NY Λ Kern, Peter Leonard '62
NY N Sherman, Lawrence Joseph '74
NY Ξ Mancuso, Richard G. '92
O'Keefe, Luke Francis '80
NY O Ribuffo, Michael Rocco '75
NY T Olenik, Anthony Michael '08
OH A Ikeda, George Toshinori '54
Markuson, Donald Miner '80
OH Θ Abdoo, Richard Anthony '65
OH K Yannayon, Benjamin C. '05
OR A Cantwell, Gary Kenneth '80
PA A Brunner, Thomas Morris '63
PA B Hertneky, John A. '79
PR A Hilerio Sanchez, Josuan '07
SC Γ Hanes, Richard Michael '67
TN A Choudhury, Ashok '83
Lillard Jr., Denny Dennis '75
Romer, Michael Christopher '04
Rosser, Howard Ward '70
Wilson, Wayne '77
TN B Thomas, James Louis '77
TN Δ Stewart, John Dale '78
TX A Dorr, Larry Daniel '68
TX B Ellisen, Arthur Raymond '62
TX Δ Cloud, Eugene Harrington '67
Johnson, Dennis Ray '74
TX E Sitton, Randal Warren '85
TX H Lin, Frank Kuo-Chiang '80
VT A Scribner, Charles Franklin '70
VA B Lovell, Lale Gokbudak '96
Lovell, Matt Bruce '96
WA A Pierce, Russ W. '70
Ross, Robert Bruce '61
WV B Ashman, Michael D. '84
Hughes II, Paul Kendrick '71

$2,500+ Eaves Club

AL A Trapane, Karen Louise '82
AL Δ Appleton, Robert Scott '90
Selby, Michael W. '96
AZ A Soukup, David Joseph '76
AZ B Barnett, J. Matthew '90
Mingo, Doug M. '83
CA A Butner, David Norman '61
Fong, Kirby William '67
Hoe, Albert '92
CA Γ Street, Robert Lynnwood '56
CA E Brunton, Daniel William '78
Dobbs, Michael Wayne '66
Schurr, Hermann Dieter '82
Schurr, Juliet N. '82
Simsarian, Greg Garabed '82
Testa, Lori Ann '01
CA Z Jacobberger, Donald Hubert '58
Pham, Alexander Hung Nhut '88
CA H Van Zwol, Jason '77
CA Θ Hinker, Fred L. '68
Lawson, Wayne Alan '69
CA I Kuspa, Joe Anthony '93
CA K Ramirez, Marvin Jerome '82
CA M Tucker, Naftalia France '89
CA N Chew, James S. B. '84
CA O Elliott, Pamela Ann '88
CA P Andersen, Eric Kenneth '79
Kraft, Lyle David '87
Owens, Lawrence Paul '82
CO A Anderson, Arvid Neil '54
Maurer, Mike Allen '87
Rense, John A. L. '74
CO Γ Mead, Dick Wilson '63
Merrill, M. Stanley '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
DC A Engram, Robert Louis '69
FL A Iwens, Ralph Peter '62
Lewis, Lee Conley '91
O'Steen, John Andrew '67
Passman, Alan Joseph '06
FL Γ Lyons Jr., Tom Francis '76
FL Δ Nugent, James Charles '95
Paulley, Jason '93
GA A Busbin, Steven J. '83
DeLoach Jr., Thomas Clifton '69
Lorenzo, Donald Kevin '77
IL A Barchenger, Kimberly '06
Buboltz, Lisa Ann '01
IL B Carter, David William '68
Forish Jr., George Edward '75
Kusner, William John '59
Sodoma, Mark Thomas '82
IL Γ Carlson, Norman Wesley '81
Dixon, David Allen '63
Gajda, Gregory Joseph '80
Schwartzbard, David Leigh '91
IL E Williams, Michael Joe '95
IL Z Glait, Scott Steven '84
IN A Ginter, James Lee '67
Harvey, James Alan '81
Hohn, Richard Edward '62
Houze Jr., Jerry Lucian '58
Lupfer, Thomas Harrison '79
Teague, Steve Michael '71
Thompson, Curtis Brooks '51
Weigand Jr., Karl Russell '66
IN Γ Kelly, Robert A. '65
Zupcic, Tony Mario '70
IN Δ Epperly, Michael Philip '65
IA A Pedersen, Robert Dennis '62
Snyder, Merrill Herbert '68
KS A Meyer, Leslie D. '65
KS B Brown, Cheryl Ann C '82
Henderson, Wesley Val '76
KS Γ Hefty, Keith William '87
KY A Anderson, Lee Roy '71
Davis Jr., Lewis Berkley '66
Halloran, Stephen Richard '75
Upshaw, Buddy Smith '65
KY B Lasky, William T. '86
LA A Nelson Jr., George Gus '52
LA B Paul Jr., Howard Cochran '80
Quarles, Harry Fred '74
LA Δ Landry, Glen Ray '75
Lejeune, James Joseph '73
ME A Blaisdell, John Robert '66
Jefts, Alan Robert '73
MD A Tate, David Marshall '84
MD B De Oms, James Howard '68
Morgan, Anne F. '87
MD Γ Merritt Jr., Charles Raymond '85
MA A Alley, Christopher P. '85
Fenner, Peter Richards '64
Lescoe, James Terrence '05
MA B Chang, Nancy Tien-Tien '87
Mandell, Gordon Keith '69
McInnes, Harold A B '49
Patterson, John Bryan '68
MA Δ Brown, Linfield Cutter '64
Buffinton, Keith William '79
Stark, Lucius Dickinson '64
Sullivan, Gerard Francis '68
MA E Bittner, Douglas E. '83
Brunetto, Tom P. '74
La Lone, James Caryle '70
Linscott, Anne Wiklord '80
MA Z Brindis, Samuel B. '80
Strzegowski Jr., Joseph C. '67
MI A Chamberlain, Adrian Ray '51
MI B Saccany, Richard Joseph '71
Vukovich, Robert James '83
MI Γ Ardis, Robert Boyd '46
Davies, John Richard '50
Frederick, Frank Thomas '71
Gromer, John David '74
Karl, Donald Edward '71
Kasper, Alan R. '62
Smithies, Henry '49
Stewart, Steve Russell '66
Subramanian, Suresh '88
Wackenhut, Thomas Carol '69
MI Δ Rossi, Nicholas Michael '63
MI E Chudd, Richard Alan '66
Szafranski, Joseph Paul '66
MN A Benjamin, Harrison Russell '57
Goodwin, Robert Wayne '62
Hanson, Henry Arthur '66
MS A Black, Howard Wayne '95
Coley, James William '61
MO A Sandfort, Robert Melvin '64
MO B Davis, Jon Timothy '85
Feurer, John Alphanse '70
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 Plummer, Scott Royce '81
Schmidt, Wayne William '70
Steube, Milan Ray '74
NV B Nietling, John J. '90
NJ B Rodgers, Douglas Noss '67
Sharkey, John Michael '84
NJ Γ Mauermeyer, Henry A. '72
Pecca Jr., John Anthony '87
Raia, Lawrence A. '65
Riede, Bruce Erwin '67
Sharon, Tony Peter '74
Weibrecht Jr., Edwin Herbert '68
NM A Smith, Jeffrey A. '84
NM B Andrews, Mark Jay '91
Menako, Jack Allen '84
NY Γ Brand, Terrance Alan '90
Geschwindner Jr., Louis Fred '67
Ordway III, Fred Delancy '69
Smith III, George Earl '80
Vilardi, Gregory Henry '90
NY Δ Abel, John Fredrick '63
Klepeis, John Emrich '85
Livingston, Laura Jane '73
Zises, Matt Scott '96
NY E Grace, John Thomas '55
NY Z Frohman, John E. '72
Zieve, Robert M. '55
NY H Arminski, Leslie M. '75
Pasquarelli, Louis Ralph '73
Stoll, Eric Duane '61
NY Θ Foell, John Daniel '77
Kaylor, James M. '88
NY I Ronan, Gregory John '81

Nagel Club
Murray E. Rudin, J.D.
NY Κ '83
Tau Bates, past and present, represent the best of engineering innovation!

Evans Club
Ashok Choudhury, Ph.D.
TN Α '83
Paying it forward by recognizing engineering talent.

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NY Μ Rest, George B. '75
NY Π Cole, David Michael '88
Hill, David Alan '77
NC Α Searle, John Randolph '70
NC Γ Hovis, John Garrison '78
Linker, Edward Markham '47
NC Δ Hinkle, Mark Otis '96
OH Α Goralski, Christian Thomas '64
Gropp, William Douglas '77
Hamilton, Joshua J. '09
Ockunzzi, Kelly Anne '94
Whittington, John T. '93
OH Β Burger III, George Dean '68
Pollock, Flavil Martin '77
Totten, James Ernest '56
OH Δ Wuerdeman, Robert Chambers '69
OH Ζ Pyers, Dean Hale '84
OH Η Bloom, Richard Larry '74
Fraass, Ronald Guy '78
Leifeste, Sam Ernest '63
OH Θ Doyle, James Thomas '65
OH Λ Nicalek, Richard Allan '76
Rohr, Timothy Paul '80
OK Α Blakeburn II, Dave Lowry '83
OR Α Arsenault, Paula Marie '81
Milton, Stuart W. '84
PA Α Leitch, Donald George '56
PA Β Cirota, Marcie Dale '95
Hummel, John Richard '73
Kolivosky Jr., John Edward '92
McGivern, Patrick John '90
Smyth, John '61
Thompson Jr., A. '63
PA Γ Wisman, Craig Burton '75
PA Δ Besarab, Anatole '65
PA Ε Kuhn, Bill Lawrence '67
Ryan, Richard Edward '86
PA Ζ Pechulis, Michael John '97
Susavidge, Mary Ann '89
Talecki, Stephen A. '76
PA Θ Kneidinger, Carl Frederick '70
Meyer, James Leo '68
PA Λ Janocko, David Jeffrey '81
Reedy, Herman E. '75
PR Α Ramirez, Miguel Angel '73
RI Α Nielsen Jr., Carl Ernest '56
RI Β Withrow, Gregory Lucian '80
SC Α Davis, Joseph Howard '91
SC Β Husband, D. Mark '83
SD Α James, Karleen Kay '86
Johnson, Jerry Allen '92
TN Α Hueser, David Lee '76
King, Greg '93
Jennings-King, Sherry Denise '93
Layman, Terry '77
Moore, Robert Monroe '66
Riggs, Donna R.H. '87
TN Γ Denny, Hugh Wayne '60
TX Α Abad-Fitts, Carmen Beatrie '80
Carroll, Billy Dan '64
Herring, David M. '55
TX Β Boyd, Suzanna Ruth '81
Carey, Martha Derden '80
Eakens, Robert William '72
Gilmer, Tracy F. '80
Newkirk, Todd Leland '87
Soules, James Gregory '79
TX Γ David, Anne Marie '87
Dobbins, James Roy '74
Lodal, Jan Martin '65
Turvey, Harry Douglas '73
TX Δ Ash Jr., Henry G. '59
Barger, David Carl '71
Clinton Jr., Daniel Darius '52
Knowles, David Wayne '80
Latham, Raymond Edgar '56
Muldrow, Grady Montgomery '89
Simpson, Stancy Jean '79
TX Η Brown, Ian William '73
Falk, Nathan Max '75
Plaskota, Amy Smaistrla '99
TX Θ Havo, Karen Patricia '86
UT Α Lyman, George Randall '79
VT Α Sheldon-Dean, James P. '79
VT Β Salazar, Marcos Edward '82
VA Α Johnson, W. Reed '53
Wadsworth, Robert Manning '82
VA Β Creslein III, William Edward '52
Pearson, Glen Hamilton '71
VA Γ Abbott, Terence Scott '75
WA Α Hulsizer, Stephen Anthony '69
Williams, Donald Sidney '66
WA Β Bowers, Jack W. '80
WI Α Tellier, Ronald Robert '73
Wolff, James F. '59
WI Β Dschida, Linda Maria '82
Whittington, Laura Lee '88
WI Γ Formella, John Patrick '81

$1,000+ Downing Club

AL Α Hawkins, Lawrence Allen '81
Shivers, Charles Herbert '75
Slotkin, Arthur Lewis '68
AL Β Hopper, Jeffrey Clark '78
AL Γ Haggard, Warren O. '94
AL Ε Zozulin, Alexander Joseph '91
AK Α Keeney, Joseph Harry '78
LaBelle-Hamer, Brendan Tully '83
Usibelli Jr., Joseph Emil '81
AZ Α de Shazo Jr., Thomas Edward '62
Mahr, Eric Michael '97
Smith, William G. '78
AZ Β Takinen, Scott Alan '79
Wong, Jack Onc '81
AZ Γ Dickson, Eric Kenneth '81
AR Α Gunderman, Stacy Linda '88
CA Α Figueira, Michael Robert '73
Mar, Wing Jong '79
Secor, Kenneth Eugene '55
Wing, Jimmie '52
CA Β Andelin Jr., John Philip '55
Lalli, Stephen John '86
CA Γ Bankovitch, Walter John '87
Dixon, Harvey Lewis '52
Frantz, Paul James '78
Holsinger, Kevin Karl '84
Ickes, Robert William '65
Reneau, Leon R. '58
Root, Steven Dale '75
Taniguchi, Brian Yoshito '77
CA Δ Barr, Juliana '80
Griffith, Glen Arthur '72
Johnson, Wesley Walter '66
Koppany, Charles Robert '63
Nakatani, David Takeshi '63
Nishimoto, Gregg Isaac '76
CA Ε Ohgi, Frank '60
Quan, Alan Chung '00
Reichert, Ralph Jeffrey '67
Ssutu, Louis '65
Yoshizumi, Steven Akira '88
CA Ζ Lampe, Fred Paul '79
Perrin, Michael Elton '67
Vlahutin, Paul Andrew '65
Wagner, J. Arthur '61
CA Η Asgari, Ramak '99
Rawson, Rollin Fred '61
CA Θ Kolderup, Nils Petter '60
Slater, Eric Kent '67
Thabault, Charles W. '91
CA Ι Dembegiotes, Pantele '84
Haan Sr., George Thomas '69
CA Κ Moncsko, George Edward '68
CA Λ Johnson, Lowell H. '65
Okpisz, Alexander Edward '91
Verbrugge, John Allen '77
CA Μ Freeman, Karl Allen '89
Lee, Steven Yang-Sien '86
CA Ν Harmeyer, Michael Allen '90
Howard, Robert Stanley '80
Jimenez, Ramon '95
Rheinhardt, Mark Edward '84
Veit, Brian Richard '98
CA Ξ Doeing, Brian James '81
Patterson, Richard Harold '74
CA Π Steinberg, Dennis Philip '72
CA Ρ Alexander, Dean Lee '80
Costello, Vincent J. '08
Mandrell, Nathan Keith '92
CA Τ Breneman, Kenneth Philip '89
Lotocky, Daniel A. '84
CA Υ Burns, Michael Thomas '88
Dawson, Carole Jeanne '85
CA Ψ Chiu, Corinna Jane '93
CO Α Allred Jr., Ivan D. '59
Bement Jr., Arden Lee '54
Cochran, Noelle Renee '86
Devoe, Tracie Kay '82
CO Β Erickson II, Thurston Gunnar '74
Luppens, John Christian '76
Walker, John Sherwood '53
CT Α Baublitz, John Eberhart '60
Cooper, Richard Craig '63
King III, C. Judson '56
Kucera, Daniel Jerome '61
CT Β Fappiano, Michael D. '87
Grossman, Richard Larry '69
Pollitt, Julie Anne '87
Seymour, Deborah Anne '86
Whittlesey, Richard Allen '64
CT Γ Boccia, Chris-Michael '97
DE Α Cercy, Michael James '81
Packard, Lawrence Bruce '88
Remondi, Benjamin William '67
DC Β Orzech, Joseph Miller '71
DC Γ Grassel, Herbert Hans '77
Mitchell, Reginald Stuart '65
Wilhelm, Eugene Bailey '86
FL Α Charlton, John Dunaway '72
Garmizo, David W. '89
Glass, John Dorrance '73
Gunter, Alan Dale '79
Lorberbaum, Henri Stuart '77
Mennes, C. Martin '68
Milburn, David M. '91
Pitt, Gary Alvis '70
Schoppman, Gregg M. '08
Vande Walle, Robert John '72
Vargas, Clark '71
Woodward, Michael Boyd '85
FL Β Alvarez, Vicente '64
FL Γ Brookins, Thomas Michael '81
Chenkin, Joseph Alan '82
FL Δ Bradshaw, Robert Henry '77
Woods, David Wayne '81
FL Ζ Hatfield, Thomas Anthony '87
FL Ι Passarelli, Brian L. '10

Continues on page 46.

IN THE COLLEGES

Tau Bates having an impact at institutions of higher learning.

Emily J. Arnold Ph.D.

Kansas Alpha '09

Emily is lead researcher on a program to design and build an adaptable radar system for long-range unmanned aerial systems. Her team at the University of Kansas' Center for Remote Sensing and Integrated Systems recently received almost $1 million from the National Science Foundation in support of this effort. She is also an associate professor of aero eng'g at KU.

Nelson da Luz Ph.D.

New York Xi '15

Nelson completed his Ph.D. in civil eng'g from the Univ. of Massachusetts Amherst in May 2022, became a postdoctoral research associate and recently started as a part-time lecturer. He earned B.S. and M.S. degrees from Manhattan College and research focuses on the confluence of data intensive computing and civil infrastructure related to water & sanitation.

Henry "Hank" R. Dennee

Vermont Beta '24

Hank has been selected to serve as the 2023-24 Regimental Commander, the highest-ranking cadet of Norwich University's Corps of Cadets. A mechanical engineering major and leadership minor, cadet Master Sergeant Dennee is a cadet captain in Air Force ROTC, and leads as a squadron and flight commander, earning Distinguished Graduate of Field Training.

SPOTLIGHT: Northern Arizona a hub for NSF INCLUDES Alliance — NAU has joined a nationwide initiative meant to raise the number of people involved in STEM education and careers who have disabilities, developing a mentorship program, and research to support students entering the field. To address these issues, the NSF launched a major national initiative in 2021, forming the NSF INCLUDES Alliance of Students with Disabilities for Inclusion, Networking, and Transition Opportunities in STEM. Also known as the TAPDINTO-STEM Alliance, it is funded through a $10 million NSF grant awarded to Auburn University. The Alliance, divided into six regional hubs, now includes 28 colleges and universities across the United States.

Cadence working with universities to support electronic design automation (EDA) — Cadence, an EDA company accredited by the DoD as a trusted supplier, is working with universities to develop a robust U.S. semiconductor design, development, and manufacturing workforce to support both defense and commercial aspects of the CHIPs Act. Senior global group director for aerospace and defense for Cadence Design Systems **James S.B. Chew,** *CA N '84*, led the team to re-structure the Cadence Academic Program to provide U.S. colleges the full suite of market leading EDA tools for classroom instruction and research projects. The planned result is to have a "job ready" engineering workforce to support semiconductor foundry manufacturing and DoD research activities.

Francis J. Doyle III Ph.D.

New Jersey Delta '85

Francis was appointed Brown University's 14th provost and will begin his tenure on July 1, 2023. Most recently, he served as dean of the Harvard School of Engineering and Applied Sciences, where he championed diversity, equity, inclusion, and belonging across the university. An accomplished engineer, Francis is a member of the NAE, National Academy of Medicine, and has industry experience as a research scientist.

Madison N. Magee

Pennsylvania Delta '21

Penn Engineering has established the Madison "Maddie" Magee Award for Undergraduate Excellence. The award honors the memory of Maddie, who graduated from Penn with a B.S. in mechanical eng'g & applied mechanics, and an M.S. in bioeng'g. She passed in May 2022, while hiking the Pacific Crest Trail. The award will be given to engineering seniors who reflect the same enthusiasm, energy, and excellence as Maddie.

Kenith E. Meissner Ph.D.

Pennsylvania Alpha '87

Kenith was named dean of the University of Texas at El Paso College of Engineering. He previously served as Pro-Vice Chancellor/Executive Dean and professor of science and engineering for Swansea University in Wales. Kenith has worked with several companies to develop a noninvasive glucose measurement system for people with diabetes and has published more than 90 papers.

John W. Nicklow Ph.D., P.E.

Illinois Epsilon '93

John will become president of Florida Institute of Technology beginning July 1 and has served as president of the Univ. of New Orleans for seven years. With research interests in the advancement of STEM education and on optimization of environmental & water resources systems, he is an ASCE fellow, and American Academy of Water Resources Engineers diplomate.

Jamie E. Padgett Ph.D.

Florida Alpha '03

Jamie is one of only five U.S. researchers to be named a National Science Foundation Brite Fellow. She is a professor of eng'g and chair of Rice University's department of civil & environmental engineering. Her proposal focuses on developing methods for infrastructure resilience modeling in response to uncertain, evolving conditions resulting from earthquakes, flooding, and other disasters.

Andrew C. Singer Ph.D.

Massachusetts Beta '89

Andrew was appointed dean of Stony Brook University's College of Engineering & Applied Sciences. He will start this position July 3, after departing the Univ. of Illinois Urbana-Champaign as associate dean for Innovation and Entrepreneurship and as an engineering professor. Andrew is an internationally recognized scholar in the field of statistical signal processing & communication systems.

FACILITIES: New Georgia Tech AI Facility — As part of the $65 million grant from the U.S. Dept. of Commerce's Economic Development Administration, the Georgia Institute of Technology will transform the Advanced Manufacturing Pilot Facility into the Artificial Intelligence Manufacturing (AIM) Pilot Facility. Associate professor **Aaron P. Stebner, Ph.D.,** *OH K '05,* who previously promised "to establish Georgia Tech as a world leader in additive manufacturing of solid materials R&D," will help lead the transition of the facility into one of the nation's first manufacturing labs designed for autonomy. The 24,000 square-foot facility on 14th Street will more than double in size, thanks to Georgia Tech and statewide GA-AIM partners being selected as one of 21 Phase II awardees.

New University of Washington (UW) Engineering Building— This fall, UW will break ground on a new, $90 million Interdisciplinary Engineering Building, thanks in part to a $10 million donation from Boeing. The state-of-the-art building will be a student-focused learning facility backed by public and private investments. The state of Washington has also dedicated $50 million to support the project that aims to fuel economic growth and create a pipeline of future, local engineering talent. With dedicated space for industry capstone projects, the new building's design further promotes close participation of students and regional industry. The 70,000-square-foot structure will provide space for project-based collaborative learning and a "home" for engineering undergraduates.

Winston O. Soboyejo Ph.D.

Massachusetts Alpha '85

Winston,"Wole," joined Worcester Polytechnic Institute in 2016, serving as the dean of engineering before being appointed as interim president in May 2022. He now serves as WPI senior vice president and provost. Wole was recently named by the World Academy of Sciences to their 2022 Class of Fellows, honored as a Fellow of the Nigerian Academy of Engineering, and continues his research on biomaterials.

John G. Speer Ph.D.

Pennsylvania Alpha '80

John was awarded the International Federation for Heat Treatment and Surface Engineering Medal. He is the endowed chair of metallurgical and materials eng'g and director of the Advanced Steel Processing and Products Research Center at Colorado School of Mines. John was honored for "his lifetime achievement in physical metallurgy, and heat treatment of advanced steel concepts from theory to practical application.

Patrick J. Wolfe Ph.D.

Illinois Alpha '97

Patrick became the provost and executive vice president for academic affairs and diversity at Purdue University in 2023, where he previously served as dean of science and professor of statistics. In 2012, he joined University College London and is the founding executive director of their Big Data Institute. A trustee and non-executive director of the Alan Turing Institute, his research focuses on the mathematical foundations.

TAU BETA PI
MATCHING GIFTS PROGRAM

Since 2012, Tau Beta Pi has received more than 3,000 matching gifts from more than 275 companies. These gifts have provided over $550,000 in funding for the Fellowship and Scholarship Programs.

If you have questions, contact Mike Brown, Director of Finance & Operations, at m.brown@tbp.org.

Does Your Company Match Your Gift to Tau Beta Pi?

Many companies have a matching gift program that matches employee gifts to charitable organizations, like Tau Beta Pi, dollar-for-dollar or even more. Some of these companies will even match gifts made by retirees and/or spouses.

Average matching gift is $171

Matching gifts have ranged from $1 to $13,333

Average of $50,000 received each year

The Tau Beta Pi Association, Inc. is a non-profit educational organization and is classified under section 501(c)(3) of the United States Internal Revenue code. Gifts to the Association are tax deductible to the extent allowable by law. All undesignated matching gifts are allocated to our Fellowship and Scholarship Programs to provide cash awards for engineering undergraduate and graduate students. To arrange a matching gift and multiply your support to Tau Beta Pi, simply follow these steps:

1. Talk to your employer to determine if TBΠ is eligible.
2. Obtain matching gift forms from your employer or submit online. Tau Beta Pi's E.I.N. # is 62-0479545.
3. Make your gift by check or credit card to **Tau Beta Pi**.
4. Send in your gift with your company's matching gift form to TBΠ, if applicable (many companies, such as Boeing, no longer accept paper forms).

Each year an average of 300 matching gifts are received and

An average of 75 companies provide matching gifts

Mailing Address: **Tau Beta Pi**
P.O. Box 2697
Knoxville, TN 37901-2697

from page 23.

Summer Problems *Continued*

BONUS: You are in a room with two other people and are told that each of you has a prime number on his forehead and that they form the sides of a triangle with a prime perimeter. You see a 5 and 11 on the others. Each of the others is asked if he knows his number, and each says no. You answer no on your first turn and again each of the other players answers no on their second turn. It is now your second turn. What is your number?

— **Richard I. Hess, Ph.D.,** *CA B '62*

COMPUTER BONUS: As a homework assignment, math Prof. Lohwater asked you to flip a coin 1000 times and write down the sequence of heads and tails observed. Some students actually perform the coin flips, while others cannot be bothered and instead invent a series of heads and tails off the top of their head.

To distinguish honest students from the cheaters, your professor examines the distribution reported by each. Most dishonest students know to report approximately the same number of heads as tails, but don't think about runs. To four significant digits, what is the expected value of the longest run for 1000 flips?

Define a run of length *k* when *k* is consecutive flips that are all the same. Assume the coin is fair, and an edge result is impossible, so that on any given flip the probability of a heads or tails is exactly 1/2.

—Humble Pi
by Matt Parker

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 **F.J. Tydeman,** *CA Δ '73;* **J.R. Stribling,** *CA A '92;* **G.M. Gerken,** *CA H '11;* and the columnist for this issue,

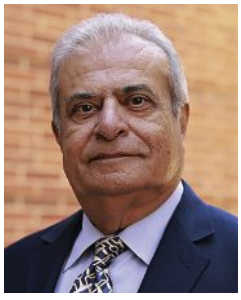
— **J.C. Rasbold,** *OH A '83*

ASAD MADNI TO ENDOW DISTINGUISHED ALUMNUS AWARD

The Association is pleased to announce a gift from Dr. Asad M. Madni, Ph.D., D.Sc., Sc.D., ***CA Epsilon '69***, distinguished adjunct professor and distinguished scientist at UCLA ECE Department, and retired president, COO, and CTO of BEI Technologies Inc., to permanently endow an annual ΤΒΠ Distinguished Alumnus Award.

The Distinguished Alumnus Award Program was inaugurated in 1993 to recognize alumni who have continued to live up to the ideals of Tau Beta Pi as stated in its Eligibility Code, and to foster a spirit of liberal culture throughout their lives after their college years. The program is an opportunity to mark in a fitting manner exemplary performance by alumni. There have been 53 recipients of this award, including Dr. Madni, who was honored in 2014 at the annual Convention in Spokane, WA.

Dr. Madni stated, "It has been my firm belief that a professionally successful career that does not include philanthropy is an incomplete and unsatisfying one. I never forget that achieving this



privilege in my profession makes it incumbent upon me and my family to give back and help and guide the generation following us. The mission of Tau Beta Pi, the largest engineering honor society, echoes our value system and I felt that there is no time better than the present to establish this gift."

Each year, one recipient of the award will be recognized as the Asad M. Madni Distinguished Alumnus. The winner will receive a recognition plaque, be invited to the Convention at the Association's expense, and a ΤΒΠ scholarship named in his/her honor will be given to a student.

Dr. Madni received B.S. and M.S. degrees from UCLA, a Ph.D. from California Coast Univ., and S.E. from MIT Sloan School of Management. He has been awarded honorary doctorates from Ryerson Univ. (D.Sc.), Technical Univ. of Crete (D.Eng.), California State Univ., Northridge (Sc.D.), Universiti Kebangsaan Malaysia (Ph.D.), National Chiao Tung Univ. (Ph.D.), and Tufts Univ. (D.Eng.).

Dr. Madni has been recognized for his engineering and scientific contributions to the development and commercialization of sensors & systems and service to the profession. A prior chairman, president, and CEO of Systron Donner Corp., he is credited with 200+ publications and 69 issued or pending patents resulting in numerous "industry firsts." The global impact and significance of his pioneering contributions have been recognized with major honors (including 2022 IEEE Medal of Honor, 2022 RAE Prince Philip Medal, 2015 IET J.J. Thomson Medal, 2016 Ellis Island Medal of Honor), and election to the most prestigious academies/professional societies.

CHAPTER ETERNAL

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

CT B

Connecticut Beta '48
Emik A. Avakian
July 11, 2013
Invented the breath-operated typewriter & computer, a mechanism to put wheelchairs on cars, and received the 1961 President's trophy for contributions to the handicapped.

The condensed style of these notices is made necessary by 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 that were 100+ years when passing are identified with "***Cent.***"

ALABAMA

ALPHA AL Α

Manley, Frank Gwilym, *'50*, July 24, 2017.
Clem Jr., Joseph D., *'51*, December 22, 2022.
Jones, Billy Prentice, *'51*, March 7, 2023.
Hayes, Edgar Glenn, *'57*, June 2, 2018.

BETA AL Β

Roberts, S. Jay, *'49*, April 7, 2009.
Sanders Jr., Joseph Everett, *'60*, April 8, 2021.
Copeland, George Larry, *'63*, Jan. 9, 2021.
Moyer, Robert Edward, *'65*, March 11, 2023.

GAMMA AL Γ

Grantham, William Garry, *'92*, May 7, 2022.

ARIZONA

ALPHA AZ Α

Coxon, Moran, *'54*, February 18, 2023.
Frederickson, Alma Anton, *'56*, Oct. 1, 2022.
Haywood Jr., Vernon V., *'73*, July 7, 2022.

BETA AZ Β

Klein, William Peter, *'70*, Nov. 12, 2022.

ARKANSAS

ALPHA AR Α

Hathaway, William M., *'41*, Feb. 18, 2022. ***Cent.***
Samuels Jr., Garland, *'47*, May 24, 2018.
Wilbourn, Sanford Malone, *'47*, Feb. 27, 2023.
Homard, Richard Bandell, *'53*, April 4, 2022.
Taylor, Alfred William, *'57*, June 14, 2021.
Peters, Carl Truman, *'58*, January 4, 2022.
Phillips, Chester Donald, *'58*, May 6, 2018.
Totty, Ronald Eugene, *'58*, February 14, 2022.
Jones, Wray Henry, *'59*, April 28, 2021.
Hammett Jr., Jack Curtis, *'61*, Jan. 1, 2018.
Parse, Allan Wayne, *'62*, February 7, 2016.
Roberts, Henry Lee, *'62*, no details.
Bradley, William Harold, *'69*, Feb. 19, 2023.

CALIFORNIA

ALPHA CA Α

Martin, Charles Robert, *'46*, Feb. 22, 2014.
Lancaster, Henry Dolphers, *'57*, June 5, 2016.
Hodges, David A., *'60*, November 13, 2022.
Selway, David Ross, *'61*, January 15, 2023.

BETA CA Β

Rupert, Claud Stanley, *'41*, February 2, 2017.
Martel, Hardy Cross, *'49*, March 29, 2012.
Whitehead Jr., Earl Glen, *'68*, Feb. 14, 2022.

GAMMA CA Γ

Burtis, Betty Legarra, *'48*, Dec. 26, 2022.
Hamilton, Willard Ellis, *'48*, no details.
Rondinelli, Ricardo Rafael, *'48*, Aug. 12, 2017.
Tillson, Gordon A., *'50*, January 1, 2019.
Levin, Robert Edmond, *'53*, March 4, 2022.

EPSILON CA Ε

Toscano, Esteban Jose, *'53*, May 1, 2015.
Christiansen, Theron L., *'62*, Jan. 14, 2023.
Shillito, Terrell Robert, *'64*, January 13, 2023.

ZETA CA Ζ

Schneider, Gar Walter, *'52*, August 15, 2022.

ETA CA Η

Sutton Jr., Herbert Bryan, *'61*, May 16, 2015.
Kirk, Kenneth George, *'63*, Dec. 22, 2022.
Berry, Craig Lane, *'65*, September 23, 2021.

THETA CA Θ

Rutter, Larry Dean, *'75*, April 21, 2018.

IOTA CA Ι

Swaidan, Brian Edward, *'68*, Dec. 18, 2021.

LAMBDA CA Λ

Fletcher, David Quentin, *'67*, August 7, 2021.

NU CA Ν

Baker Jr., Arthur Winton, *'66*, no details.
Aleshire, Richard Bruce, *'72*, Oct. 12, 2020.
Bloom, William Robert, *'72*, August 4, 2022.

COLORADO

ALPHA CO Α

Wing, Edwin Eno, *'60*, January 8, 2023.

BETA CO Β

Field, Marshall J., *'49*, April 5, 2023.
Peterson, Robert Keith, *'51*, Feb. 13, 2023.
Whiting, Ellis E., *'55*, May 11, 2016.
Cole Jr., Charles Owen, *'61*, May 13, 2022.
Light, Richard W., *'64*, May 11, 2021.
Klein IV, John Conrad, *'74*, no details.

CONNECTICUT

ALPHA CT Α

Bugel, Robert Harry, *'45*, February 12, 2023.
Canepa, Lucian Charles, *'50*, Jan. 28, 2023.

BETA CT Β

Avakian, Emik A., *'48*, July 11, 2013.
Vasmanis, Martin A., *'60*, December 5, 2021.
Gruss, Robert Paul, *'61*, July 23, 2017.

DELAWARE

ALPHA DE Α

Rice, Stephen John, *'67*, October 15, 2021.
Gonzalez, Jose Rafael, *'84*, Nov. 28, 2022.

DISTRICT OF COLUMBIA

ALPHA DC Α

Amoo, Michaela Edwina, *'03*, April 11, 2023.

FLORIDA

ALPHA FL Α

Bevis, Herbert Anderson, *'51*, Oct. 28, 2019.
Muth, Eginhard Joerg, *'51*, Dec. 22, 2020.
Ellifritt, Duane Scott, *'57*, January 22, 2018.
Roan Jr., Vernon Parker, *'58*, Sept. 22, 2017.
Wattleworth, Joseph A., *'59*, March 17, 2022.
Osteen, Robert Ernest, *'62*, May 11, 2017.
Saunders, Daniel Gary, *'73*, Jan. 30, 2023.
Sechrest, Adam Christopher, *'06*, Feb. 7, 2023.

GAMMA FL Γ

Caramalis, Nicholas, *'75*, July 12, 2022.

ETA FL Η

Kazdan, Joshua Michael, *'24*, Feb. 24, 2023.

GEORGIA

ALPHA GA Α

Winn, Charles Evans, *'47*, Sept. 16, 2021.
Granberry, William A., *'49*, no details.
Spach, Jule Christian, *'49*, March 26, 2022.
Branch Jr., Henry Steiner, *'51*, Oct. 18, 2015.
James Jr., Robert Lee, *'55*, Dec. 13, 2016.
Parrish III, James Lamar, *'60*, March 4, 2021.
Brink, Henry Joseph, *'61*, February 11, 2022.
Crapps, David K., *'62*, January 27, 2023.
Wells, Eugene M., *'72*, January 10, 2023.

ILLINOIS

ALPHA IL Α

Dreshfield Jr., Arthur C., *'51*, Jan. 24, 2023.
Leichner, Gene Howard, *'51*, March 31, 2017.
Schunneman, Robert Francis, *'52*, no details.
Zachan, Paul Herman, *'52*, Nov. 8, 2011.
Dobbin, James W., *'53*, April 24, 2019.
Balden, Samuel Beckham, *'54*, Dec. 23, 2022.
Lehmann, John R., *'56*, October 13, 2018.
Ries, Roger Philip, *'66*, June 25, 2017.

BETA IL Β

Berczynski, Frank A., *'58*, July 28, 2021.
Courtney III, Thomas J., *'63*, Jan. 23, 2023.

GAMMA IL Γ

Krebs, James Norton, *'45*, July 20, 2022.
Struve, Theodore Andrew, *'57*, April 5, 2021.
Dake Sr., Timothy William, *'72*, May 28, 2022.

INDIANA

ALPHA IN Α

Hughel, Thomas Josiah, *'42*, May 7, 2005.
Schalliol, Willis Lee, *'42*, April 5, 2016.
Koenig, Leslie Arthur, *'44*, March 28, 2020.
Curdts III, William Theodore, *'48*, Jan. 3, 2017.
Delleur, Jacques William, *'49*, Feb. 4, 2022.
Martin, Olin Guy, *'49*, December 22, 2022.
Blakesley, James Flinn, *'50*, March 4, 2016.
Chew, William Bates, *'50*, October 9, 2014.
Jacobs, Charles Edward, *'51*, August 4, 2022.
Schultz, James Craig, *'51*, December 5, 2021.
Olin, David Burton, *'52*, December 20, 2022.
Rohrer, James C., *'52*, April 28, 2021.
Blevins, Frederick Zane, *'54*, April 28, 2017.
Gaubatz, William Arthur, *'55*, July 5, 2014.
Keller, Jack Louis, *'56*, October 1, 2021.
Lyon, Richard Connelly, *'56*, June 27, 2020.
Wolf, Philip Richard, *'57*, March 15, 2021.
Tredwell, John, *'58*, no details.
Keir, Yates Arthur, *'59*, no details.
Hodge, Daniel Bert, *'60*, July 20, 2022.
Warnke, Terry Porter, *'60*, Sept. 4, 2014.
Balser, Steven John, *'69*, June 1, 2022.
Anderson, Rex Randall, *'83*, no details.

BETA IN B

Glass, Eugene Hayter, *'49*, May 16, 2021.
Royer, Robert Lewis, *'49*, March 5, 2023.
Rose, Gerald Clinton, *'57*, January 25, 2023.

GAMMA IN Γ

McDonald, Patrick John, *'60*, Nov. 12, 2022.
Makarewicz, Peter James, *'73*, July 4, 2022.

DELTA IN Δ

Runge, Lambert John, *'58*, January 21, 2020.

EPSILON IN E

Guilford, Albert Alexander, *'54*, Dec. 21, 2021.

IOWA

ALPHA IA A

Hudek, Vernon Raymond, *'42*, Aug. 22, 2000.
Wheelock, Thomas David, *'49*, Feb. 3, 2023.
Beyers, Gerald Carlton, *'55*, January 1, 1999.
Bolger, Robert Glenn, *'57*, October 20, 2020.
Seaton Jr., Donald Francis, *'59*, May 12, 2022.
Willhite, Glen Paul, *'59*, December 22, 2022.

BETA IA B

Farrell, George F., *'48*, no details.
Penhollow, John Orin, *'56*, April 24, 2022.

KANSAS

ALPHA KS A

Palmer, Donald Marlon, *'49*, May 16, 2013.
Svoboda, Charles Richard, *'49*, Sept. 16, 2022.
Holdeman Jr., Leslie, *'50*, November 8, 2022.
Arensberg, Theodore F., *'53*, May 11, 2012.
Duvall, Leland Ross, *'54*, January 24, 2022.
Dyerson Jr., Clyde Wilfred, *'54*, March 5, 2017.
Gillam, Charles Eugene, *'54*, Oct. 29, 2020.
Rogers, Gene L., *'54*, September 16, 2019.
Adam Jr., Paul James, *'56*, August 14, 2017.
Applegate, Rodney Sanger, *'56*, Feb. 5, 2017.
Finch, Harold LeRoy, *'56*, January 8, 2023.
Holtwick, Willis Bruce, *'56*, Feb. 17, 2020.
Rolfe, Stanley Theodore, *'56*, Jan. 23, 2023.
Trott, Beverly Dale, *'56*, February 6, 2023.
Daugherty, Don Gene, *'57*, Dec. 22, 2016.
Holtzman, Julian C., *'58*, April 23, 2012.
Prather, Royace Houston, *'68*, no details.
Speckin, John Joseph, *'88*, April 13, 2023.

GAMMA KS Γ

Laverentz, Harold Dale, *'57*, April 24, 2021.

KENTUCKY

ALPHA KY A

Gould, William Howard, *'61*, no details.
Newcom, David Leon, *'62*, April 23, 2020.

BETA KY B

Leep, Herman Ross, *'63*, July 18, 2022.

LOUISIANA

ALPHA LA A

Gautreau, Elmo Vincent, *'49*, June 20, 2013.
Mizell, Maddox Wade, *'49*, October 24, 2015.
Evans, Joe Tate, *'51*, November 27, 2018.
Craft Jr., Benjamin Cole, *'54*, May 7, 2013.
Rollo, Anita Hand, *'60*, January 1, 2023.
Smith III, Edwin A., *'69*, no details.
Alexander, Gordon Gliss, *'84*, Nov. 2, 2022.

GAMMA LA Γ

Wood, Jewel James, *'54*, February 22, 2016.
Southern, Willie Ray, *'59*, November 16, 2022.

DELTA LA Δ

Trumps, Regis Gaudens, *'54*, Sept. 28, 2014.

MAINE

ALPHA ME A

Hutchinson, George K., *'55*, August 25, 2018.

MARYLAND

ALPHA MD A

Dorsey, Herbert Warfield, *'62*, Feb. 19, 2023.
Mied, Richard Paul, *'68*, July 16, 2022.

BETA MD B

Grill Jr., Philip August, *'44*, no details.
Kociscin, Joseph John, *'59*, April 14, 2023.

MASSACHUSETTS

ALPHA MA A

Hatch, Walter Howard, *'46*, May 27, 2021.
Scanlon, Walter Carpenter, *'50*, Dec. 17, 2022.
Coffey Jr., Richard A., *'51*, Dec 18, 2022.
Meyer, Robert Aldrich, *'52*, October 2, 2021.
O'Shea, Richard L., *'61*, February 13, 2023.

BETA MA B

Spencer, Charles D., *'50*, November 27, 2018.
Lindenlaub, John Charles, *'55*, Dec. 29, 2022.
Wechsler, Alfred Elliot, *'55*, January 20, 2023.
Logcher, Robert Daniel, *'58*, July 20, 2021.

DELTA MA Δ

Wilson, Neil Hepburn, *'50*, no details.

EPSILON MA E

Gibb, Frederic Stephen, *'54*, June 21, 2016.

ZETA MA Z

Kaveney Jr., Frank Joseph, *'59*, July 8, 2016.

IOTA MA I

Klupa, Robert Michael, *'00*, March 6, 2023.

MICHIGAN

ALPHA MI A

Erickson, Wayne Douglas, *'54*, Nov. 30, 2018.
Clute, George Eugene, *'56*, May 10, 2015.
Nugent, Duane Chester, *'60*, Feb. 24, 2023.
Cesarz, Joseph Alex, *'62*, December 8, 2020.
Kakalik, James Steven, *'64*, July 4, 2019.

BETA MI B

Robinson, James E., *'53*, no details.
Niles, Harlan Blandford, *'57*, Sept. 27, 2022.
Johnson, Phillip Paul, *'59*, October 5, 2020.
Taylor III, John Booth, *'59*, October 19, 2017.
Dzakowic, Gerald Steven, *'63*, Dec.13, 2019.
Luttinen, Gail Lee, *'68*, March 26, 2022.

GAMMA MI Γ

Clark, Jarrett Ross, *'43*, no details.
Smith Jr., Harold Leroy, *'44*, May 10, 2014.
Finlay Jr., Alex, *'46*, July 18, 2017.
Seitz, James Erwin, *'50*, March 22, 2021.
Cheng, Herbert S., *'52*, October 24, 2022.
Propson, Thomas Peter, *'55*, Jan. 16, 2023.
Upham, Donald Lee, *'58*, February 1, 2023.
Bensinger, Theodore W., *'64*, Dec. 14, 2022.

DELTA MI Δ

MacVeigh, James Grant, *'65*, no details.

EPSILON MI E

Ciarkowski, Arthur A., *'71*, June 17, 2019.

ETA MI H

Lane, Jeffery Charles, *'77*, March 12, 2023.

MINNESOTA

ALPHA MN A

Carlson, Charles Winston, *'64*, no details.

MISSISSIPPI

ALPHA MS A

Bell Jr., Charles James, *'49*, Aug. 28, 2020.
Winders, Joseph Wilfred, *'49*, April 23, 2015.
Brown, Robert Emmet, *'51*, Jan. 30, 2021.
Wansley, James F., *'58*, March 26, 2023.

MISSOURI

ALPHA MO A

Albright, Michael Ralph, *'71*, Sept. 17, 2022.
Kaye, D. Michael, *'73*, November 30, 2012.

BETA MO B

Luetjen, Hulen Homan, *'50*, May 14, 2016.
Jones, James C., *'54*, August 1, 2022.
Rethmeyer Jr., James W., *'55*, Nov. 5, 2017.
Bruegging, John Jerome, *'59*, Oct. 15, 2020.
Brunkhart, Gerald Edgar, *'61*, Feb. 4, 2023.
Clark, Clinton Anthony, *'63*, no details.
Koester, Robert Dale, *'63*, August 18, 2022.

GAMMA MO Γ

Winsby, Don Wiltshire, *'50*, March 6, 2023.

NEBRASKA

ALPHA NE A

Bishop, Kenneth LeRoy, *'50*, Jan. 12, 2023.

NEW HAMPSHIRE

ALPHA NH A

Rogler, Russell L., *'61*, no details.

NEW JERSEY

ALPHA NJ A

Schenck, Cornelius William, *'46*, Feb. 25, 2023.
Danielson Jr., Walter R., *'51*, August 9, 2013.

BETA NJ B

McCoy, Robert M., *'49*, February 9, 2023.
Kramer, Emanuel, *'54*, May 7, 2018.
Christoffersen, Harold, *'56*, Nov. 20, 2019.

GAMMA NJ Γ

Clark, James William, *'51*, no details.
Hoffman, Charles Edward, *'52*, Oct. 26, 2021.
Sulewski, Chester Joseph, *'52*, no details.
Marschall, Robert W., *'59*, March 14, 2022.
Van Splinter, Peter A., *'60*, March 9, 2023.

DELTA NJ Δ

Boggs, David R., *'72*, February 19, 2022.

NEW YORK

ALPHA NY A

Lee, Harry Gravely, *'46*, June 27, 2019.

BETA NY B

Steltz, William Godfrey, *'53*, no details.
Edmonds, James Stuart, *'59*, Jan. 25, 2023.

GAMMA NY Γ

Hicks, William Trevalyn, *'46*, no details.
Miller, Rollin Ted, *'46*, January 13, 2023.
Holden, Herbert King, *'50*, May 11, 2004.
Pike, Richard, *'52*, December 13, 2022.
Timour, Sune Edgar Vincent, *'52*, no details.
Cantella, Michael Joseph, *'54*, Nov. 28, 2022.
Rand, Robert Allen, *'64*, January 17, 2023.

DELTA NY Δ

Howard, Robert W., *'57*, November 20, 2022.
Light, Glenn C., *'59*, no details.

EPSILON NY E

Gutlove, Norman Michael, *'52*, Oct. 9, 2016.
Spiro, George, *'54*, May 11, 2021.

ZETA NY Z

Barbieri, John Dante, *'53*, Dec. 24, 2021.

ETA NY H

Wasserman, Herbert, *'48*, no details.
Weiss, Ira M., *'63*, no details.

THETA NY Θ

Degni, Dante H., *'58*, January 6, 2021.

IOTA NY I

Pattarini, Caesar B., *'53*, October 23, 2002.

TN A

Tennessee Alpha '53

Alvin W. Trivelpiece, Ph.D.

August 7, 2022

Served as director of the DOE Office of Energy Research under Reagan, director of ORNL creating the Office of Lab Computing, and wrote a classic textbook on plasma physics.

TX D

Texas Delta '64

William M. Barnes, Ph.D.

February 24, 2023

Was an expert consultant automating the new zip code system in 1968. Spent 33 years with Rockwell Int'l. and received Leonardo da Vinci Award as an Outstanding Engineer.

KAPPA NY K

Minor, James Carr, *'65*, December 27, 2021.

NU NY N

Taube, Robert George, *'77*, March 6, 2023.

NORTH CAROLINA

ALPHA NC A

Barnes Jr., Vernon M., *'48*, January 15, 2020.
Hopkins, John Clinkscales, *'58*, Sept. 20, 2016.
Loppacker Jr., Everett P., *'60*, Oct. 20, 2022.
Hamrick, Harold Paul, *'62*, August 1, 2014.
Palmour, John Williams, *'83*, Nov. 13, 2022.

NORTH DAKOTA

ALPHA ND A

Meyer, Lawrence Lester, *'56*, Feb. 5, 2023.
Dahlstrom, Darrell Duane, *'57*, Feb. 21, 2015.
Fendrick, Arthur A., *'62*, December 5, 2016.
Brovold, Ronald Allen, *'64*, October 14, 2022.
Thompson, Allan T., *'66*, June 10, 2022.

OHIO

ALPHA OH A

Detrick, Richard William, *'55*, Jan. 10, 2022.
Schmidt Jr., Fred A., *'61*, June 10, 2022.
Eisenstat, Stanley Charles, *'66*, Dec. 17, 2020.

BETA OH B

Secosan, Cornell, *'50*, February 3, 2023.
Fricke, Arthur Lee, *'57*, August 4, 2017.

GAMMA OH Γ

Kent, George Charles, *'43*, Dec. 19, 2022.
Ryland, Robert Reginald, *'53*, Dec. 25, 2022.

EPSILON OH E

Reader, Karl Frederick, *'61*, Jan. 17, 2023.

ZETA OH Z

Mazziotti, Philip, *'56*, January 1, 2012.

ETA OH H

Franke, Milton E., *'52*, February 9, 2023.

OKLAHOMA

ALPHA OK A

Nelson, George Nichols, *'55,* Oct. 6, 2022.
Melcher, Raymond William, *'57*, Feb. 4, 2021.
Hamernik, Robert Edward, *'59*, June 29, 2022.
Rains, Thomas H., *'64*, March 10, 2022.

OREGON

ALPHA OR A

McMicken, Craig Walter, *'50*, Jan. 21, 2022.
Bontadelli, James Albert, *'51*, Oct. 30, 2022.
Bucy, David Alvin, *'55*, February 4, 2023.
Betebenner, George W., *'57*, March 18, 2023.
Miyasaki, Roger Kenichi, *'68*, no details.
Kraemer, Thomas Fredrick, *'77*, Feb. 12, 2018.

PENNSYLVANIA

ALPHA PA A

Gilchrist, Claude Denis, *'41*, March 11, 2017.
MacAdams, Richard J., *'46*, Dec. 16, 2020.
Josenhans Jr., Fred George, *'51*, Dec. 1, 2014.
Niemann, Robert Arthur, *'53*, Nov. 4, 2007.
Sarubbi, Robert Guy, *'53*, April 8, 2022.
Minsker Jr., John Henry, *'61*, March 25, 2023.
Hofer, Charles Warren, *'62*, March 28, 2017.
Andrews, James Stuart, *'69*, Dec. 29, 2022.

BETA PA B

Williams, Theodore J., *'49*, April 27, 2013.
Wiseman Jr., Roderick J., *'54*, Feb. 14, 2023.
Williams, John Roger, *'60*, Dec. 27, 2022.

GAMMA PA Γ

Hunt, Harold W., *'51*, January 18, 2023.
Banning III, Archibald T., *'55*, Jan. 21, 1994.
Zuckerwar, Allan Joseph, *'56*, Oct. 13, 2014.
Russell Jr., Robert Harry, *'57*, June 18, 2022.

DELTA PA Δ

Hagist, Warren Mellor, *'48*, Dec. 27, 2022.
de Leon Jr., Manuel, *'51*, May 19, 2022.
Magee, Madison Nicole, *'21*, May 28, 2022.

EPSILON PA E

Ruffini, John Arthur, *'51*, April 11, 2020.

ZETA PA Z

Walter, Donald Kenneth, *'53*, May 19, 2022.
Palmer, Fred I., *'63*, January 15, 2015.

THETA PA Θ

Shiavi, Richard, *'65*, March 31, 2023.

IOTA PA I

Henry, Martin W., *'72*, no details.

KAPPA PA K

Martin, Martha Sutherlin, *'77*, Feb. 24, 2023.

RHODE ISLAND

ALPHA RI A

Starkweather, James Oliver, *'45*, Oct. 22, 2021.

BETA RI B

Barber III, Hiram William, *'55*, June 15, 2022.

SOUTH CAROLINA

ALPHA SC A

Woodle Jr., Hughey A., *'51*, January 7, 2019.
Dysart III, Benjamin Clay, *'61*, July 9, 2022.

BETA SC B

Squires, Thurston W., *'60*, January 15, 2020.
Bailey, John Edward, *'71*, October 27, 2021.

GAMMA SC Γ

Henderson, Robert Edward, *'49*, Oct. 31, 2020.
Brooks Jr., Frederick P., *'53*, Nov. 17, 2022.
Smith, Leonard Barnett, *'53*, Sept. 7, 2013.
Hughes, Robert King, *'58*, July 16, 2022.
Baker, Gregory Morrison, *'94*, April 12, 2020.

SOUTH DAKOTA

BETA SD B

Lembke, Walter Dale, *'51*, Dec. 17, 2020.

TENNESSEE

ALPHA TN A

Goff, James Edward, *'48*, December 7, 2020.
Stuck, Robert Charles, *'50*, Nov. 11, 2001.
Trivelpiece, Alvin William, *'53*, Aug. 7, 2022.
Baker, Joseph H., *'54*, March 21, 2023.
Hallmark, Thomas Milton, *'58*, April 12, 2022.
Gault, Kenneth Ray, *'63*, January 23, 2017.
Patterson, Larry Gene, *'64*, April 13, 2020.
D'Amico, Joseph Frank, *'70*, no details.

BETA TN B

Parker, Frank L., *'48*, August 10, 2022.
Johnson Jr., Lee Ensign, *'53*, Nov. 3, 2016.
Piner, Clifton Lee, *'62*, no details.
Keller, Tony Scott, *'86*, December 6, 2006.

DELTA TN Δ

Papasan, Larry W., *'63*, May 1, 2022.
Ray, Asit K., *'66*, April 24, 2022.

EPSILON TN E

Halford, Carl Edwin, *'66*, August 1, 2021.

TEXAS

ALPHA TX A

Douglas Jr., Jim, *'46*, May 5, 2016.
Langner, Charles Arthur, *'46*, April 23, 2022.
Henson, Jimmy Howard, *'54*, no details.
Helland Jr., George A., *'59*, February 24, 2023.
Green, Roger, *'65*, August 11, 2021.
Cotton, Charles Jackson, *'75*, March 14, 2023.

GAMMA TX Γ

Rosson, Harold Frank, *'49*, January 12, 2023.
Blenkarn, Kenneth Ardley, *'52*, Dec. 5, 2022.
Griswold, Ronald Kent, *'71*, no details.

DELTA TX Δ

Goodwin Jr., Vernon H., *'49*, October 2, 2022.
Abramson, Hyman N., *'50*, Dec. 19, 2022.
Hodges, Teddy Omar, *'50*, April 24, 2020.
Hegmann, Edward William, *'53*, Feb. 10, 2019.
Whaley, Lawrence Monroe, *'53*, no details.
Biard, James Robert, *'54*, Sept. 23, 2022.
Jahn, Samuel, *'54*, December 22, 2020.
Pinson, James Max, *'54*, November 14, 2005.
Trimble, James Curtis, *'54*, Feb. 20, 2023.
Thielemann, Albert C., *'61*, Dec. 2, 2018.
Grubbs, Edward Clayton, *'62*, Feb. 9, 2019.
Ogden, Daniel Curtis, *'62*, Sept. 29, 2022.
Gentry Jr., Roy L., *'63*, January 9, 2023.
Barnes, William M., *'64*, February 24, 2023.
Kocurek, James David, *'70*, April 13, 2016.
Kocurek, James Nathan, *'94*, no details.

EPSILON TX E

Ford, Samuel, *'64*, December 30, 2022.
Lu, Yeh-Pei, *'65*, May 28, 2020.
Davison, Gary Alan, *'78*, no details.

Continues on page 49.

COUNCIL'S CORNER

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VOLUNTEERING WITH TAU BETA PI

As you may have seen during our National Volunteer Month profiles during April, we have 1,000+ volunteers around the world who make all the work of TBΠ possible. Other than a small but mighty Headquarters staff in Knoxville, all our Association Officials, committee members, program directors, etc., volunteer their time and talents to make everything we do possible. We are constantly on the lookout for more volunteers to join us, either to replace folks who have moved on to other commitments, or to support new focus areas and work for the organization. Here's a sampling of just a few of the many opportunities we have available:

- **Alumni Chapter members and officers:** We currently have 50 local Alumni Chapters that are always looking to connect Tau Bates with each other and to support their collegiate chapters and surrounding communities. These are awesome ways to make new friends and serve your community, particularly if you have recently moved to a new part of the country. To see the current list of active chapters and find a local contact you can connect with, visit: *www.tbp.org/?ACcontact*.
- **Executive Council members:** Tau Beta Pi is officially governed by a nine-member Executive Council, which operates like a non-profit board of directors. Three new members are elected every fall and serve for three years, to make decisions and set direction for the organization in between annual Conventions. Nominations can be made by any student or Alumni Chapter (a one-page letter will suffice), and are due by July 1 each year. Email *tbp@tbp.org* for more details or to submit your nomination.

Alumni and collegiate members at the recent District 13 Conference.

- **Committee assignments:** Over the last couple years, we have started new committees and task forces focused on improvement opportunities ranging from membership recruitment improvement to advisor success to diversity/equity/inclusion to member awards and much more. These committees are typically a small group of Tau Bates with a variety of experiences to provide a mix of perspectives and new ideas.
- **District Directors:** As you may recall from your student days, TBΠ has a strong network of District Directors (typically 3-4 covering each of our 16 Districts around the country) who support the work of our student chapters by participating in student initiations, organizing student interaction events each spring and fall, providing input, and acting as an important source of continuity as students enter and leave their chapters. Due to the location-based nature of these positions, we're always on the lookout for directors to backfill for those who have relocated or taken on new roles in life.

This is only a subset of the many opportunities available. If you are interested in any of these, or if you think TBΠ is a place you would like to reinvest some of your time and talent, please let us know by filling out our Google volunteer form available at *www.tbp.org/?opps*. Headquarters will get back with you and help find the right match for your passions.

Thank you again for all you do in your communities, and we look forward to your continued support of all the work that makes Tau Beta Pi the great organization that it is and can be!

MIKE PETERSON is a special lecturer on statistics and leadership at Oakland University. He also co-owns a STEAM enrichment program with his wife Michelle called Challenge Island – Oakland County East, which provides hands-on workshops to kids ages 4-14. He joined the TBΠ Executive Council in 2019 and currently serves as Secretary for the Association. He has a B.S. in electrical engineering from Iowa State University, and master's degrees in engineering and management from MIT.

GEORGIA DELTA

GEORGIA DELTA

was installed as a Tau Beta Pi Chapter at the University of Georgia on February 25, 2023. Councillor Mennatoallah Youssef, Ph.D., *VA Γ '04*, was the official installing deputy of the Society's 258th (252nd active) collegiate chapter, assisted by Executive Director Curtis D. Gomulinski, *MI E '01*, District 5 Directors David J. Cowan Jr., P.E., *FL E '14*, Josuan Hilerio Sanchez, *PR A '07,* and District 6 Director Ellen S. Styles, *AL Δ '85*.

The 2022 Convention granted a chapter to Tau Beta Gamma, represented in Knoxville, TN, by President Joselin Ortuno, Outreach Coordinator Jessica R. Shiffman, and Advisors David E. Stooksbury, Ph.D. and Donald J. Leo, Ph.D. Ortuno and Shiffman had the honor of becoming the first members of their chapter during the model initiation at Convention.

INITIATION AND INSTALLATION

The Science Learning Center was the site of the formal ceremonies of initiation and chapter installation, witnessed by TBΠ members Mr. Gomulinski; Gabriel F. Kranenburg, *NC H '23*; Caroline L. Peak, *SC A '23*; Allison H. Royer, *NC H '23*; Daniel A. Smith, *NY I '20*; Martin L. Tanaka, Ph.D., P.E., *NC A '92*; Shreya Thammana, *SC A '21*; Gregory K. Tharp, *CA A '87*; Mary B. Wagner, *WI B '91*; and Richard A. Walker, *MI Δ '73*. The initiation team included: Matthew G. Cardell, *NC Δ '23*; Donald J. Leo, Ph.D., *IL A '90*; Etienne Lambert, *NC Δ '23*; Luis F. Maggiori, *FL H '23*; Joselin Ortuno, *GA Δ '23*; Austin Roberts, *FL H '24*; Kimmy A. Romstad, *MI Θ '14;* Jessica R. Shiffman, *GA Δ '23*; Robert C. Styles, *AL Δ '76*; and four of the five Association Officials listed previously. Forty-five undergraduates, fourteen alumni, and one eminent engineer comprise the charter members.

Immediately after the formal initiation, the new members were constituted a new chapter in the ceremony of installation conducted by Dr. M. Youssef. The ceremony included the formal election and installation of the chapter's charter officers and advisors.

BANQUET

Following the ceremony, participants traveled to the Grand Hall in the Classic Center in downtown Athens for a formal banquet. The new chapter officers served as masters-of-ceremony, welcomed the guests, and introduced the speakers.

Dr. M. Youssef noted that *Tau Beta Pi is People* and the importance everyone plays in the success of the Association. Mr. Gomulinski shared the notable contributions many Tau Bates have made to society and challenged both the alumni to achieve even greater things and the students to keep the chapter going strong. On behalf of his fellow District 5 Directors, Mr. Hilerio Sanchez welcomed the members and chapter to Tau Beta Pi and District 5.

Provost Jack Hu thanked the students and faculty members for their diligent work for bringing Tau Beta Pi to the University of Georgia, which is just one mark of the growth of engineering over the past several years. He also thanked the out-of-town guests for making the trip to Athens.

The evening concluded with President Ortuno and Chief Advisor Leo presenting membership certificates to the new members.

First Officers (left to right)
David Stooksbury, Sarah Torbert, Joselin Ortuno,
Corianna Mayne, Sarah Lewis, and Donald Leo
Not Pictured: Stephan Durham.

Charter Presentation (left to right)
Donald Leo, Joselin Ortuno,
Mennatoallah Youssef, and Curtis Gomulinski.

Initiation Team (left to right)
Donald Leo, Mennatoallah Youssef, Josuan Hilerio Sanchez, David Cowan, Etienne Lambert, Joselin Ortuno, Matthew Cardell,
Jessica Shiffman, Luis Maggiori, Ellen Styles, Austin Roberts, Kimmy Romstad, and Robert Styles.

Charter Members of Georgia Delta

TENNESSEE ETA

Photos credit: Kristi Jones

TENNESSEE ETA

was welcomed as a Tau Beta Pi Chapter on March 4, 2023. President Rachel K. Alexander, P.E., *CA Ψ '15*; Executive Director Curtis D. Gomulinski, *MI E '01*; and District 6 Director Ellen S. Styles, *AL Δ '85,* traveled to Lipscomb University in Nashville to formally install the Society's 259th (253rd active) collegiate chapter.

President Amanda R. Higginbotham, Vice President C. Summar Hill, and Advisor A. Fort Gwinn Jr., Ph.D., represented the Lipscomb Engineering Honor Society at the 2022 Convention which granted a chapter to the local society. Higginbotham and Hill were initiated during the model initiation during Convention.

INITIATION AND INSTALLATION

The formal ceremonies of initiation and chapter installation were held in the Ward Lecture Hall. The initiation team included: J.W. Bruce II, Ph.D., *AL Δ '91;* Nathan D. Foldenauer, *AL Δ '23;* A. Fort Gwinn, *TN Γ '75;* John A. Harris, *TN Γ '22;* Amanda R. Higginbotham, *TN H '23;* C. Summar Hill, *TN H '23;* John F. Hutton, Ph.D., *IN Δ '91;* Chief Advisor Todd A. Lynn, Ph.D., P.E., *TN Γ '92;* Donna R.H. Riggs, P.E., *TN A '87;* Heidi E. Seuss, *TN A '23;* Robert C. Styles, *AL Δ '76;* J. Hunter West, *KY B '23;* and Yancey D. Williams II, *AL Γ '23;* and two of the three Association Officials listed previously. The ceremony was witnessed by a number of TBΠ members including Rene K. Aldrich, *SD A '02;* Carl B. Baughman, *IN A '73;* Richmond Boone, *TN Γ '24;* Kelly X. Campo, *AL Δ '23;* Sarah M. Cullop, *KY B '24;* Nicholas O. Davis, *TN Γ '23;* Elizabeth M. Dawson, *AL Δ '23;* Kennley C. Gabel, *TN Γ '23;* Curtis D. Gomulinski; John H. Gruetzmacher, *FL A '74;* Fred T. Gilliam Jr., Ph.D., *TN A '69;* W. Marlin Keel, *TN B '69;* Kate E. Lanza, *AL Δ '25;* Christ Moo, *KY B '23;* Elijah C. Moore, *AL Δ '25;* Richard S. Peugeot, *TN A '60;* and Janell A. Prater, *KY B '23.*

Fifteen undergraduates, fifteen alumni, and one eminent engineer comprise the charter members. Ms. Alexander 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

The new members, their guests, and TBΠ representatives headed to the Ezell Board Room on Lipscomb's Campus to celebrate the installation with a formal banquet. Following dinner, the formal program began with President Higginbotham serving as master-of-ceremonies.

District 6 Director Styles welcomed the new chapter to District 6 on behalf of the other two District Directors and the other 16 chapters. Mr. Gomulinski challenged the new members to continue the good work started by their predecessors and to seek out their passions in life. Ms. Alexander encouraged the new Tau Bates to take advantage of the opportunities Tau Beta Pi offers and to continue to build their professional networks.

Dean P. David Elrod II, *TN H '99,* welcomed everyone on behalf of the university and thanked Dr. Gwinn for his steadfast commitment to bringing TBΠ to Lipscomb. President Higginbotham and Vice President Bluestein welcomed the guests and recognized Richard Peugeot for his support of the university and Fred T. Gilliam Jr., Ph.D., *TN A '69*, who was the founding dean of engineering. The program concluded with the presentation of certificates to the new chapter members.

First Officers (left to right)
Ryman Lollar, A. Fort Gwinn, C. Summar Hill, John Hutton, Amanda Higginbotham, Todd Lynn, and Elaysa Deaver.

Charter Presentation (left to right)
A. Fort Gwinn, Amanda Higginbotham, Rachel Alexander, and Curtis Gomulinski.

Initiation Team (left to right)
Todd Lynn, John Hutton, C. Summar Hill, J. Hunter West, Amanda Higginbotham, Yancey Williams, Rachel Alexander, Nathan Foldenauer, Donna Riggs, John Harris, A. Fort Gwinn, Robert Styles, and Ellen Styles. Not Pictured: J.W. Bruce II and Heidi Seuss.

The Charter Members and Advisors of Tennesse Eta

District Doings ★

All but one of the 2023 District Conferences were held in person this year. Images and summaries from a few of the conferences are included here.

MARCH 25-26, 2023:

District 2

Sixty-six student leaders from 17 collegiate chapters in New Jersey and New York gathered at Binghamton University and were hosted by the NY Tau Chapter. Meetings and activities took place, including Engineering Futures professional development workshops and networking with local alumni and Association Officials. In addition, chapters presented a variety of project ideas.

D2 Directors are pictured above.

On Saturday, March 4, ΤΒΠ Director of Alumni Affairs, Tricia Gomulinski, officially installed the Kansas City Alumni Chapter during the District 9 Conference.

In the image above, KC Alumni Chapter officers display the charter: (left to right) Vice President Matt Romero; Treasurer Will Lindquist; President Jordan Jurcyk; and Secretary, Brent Barcus.

MARCH 4, 2023:

District 9

The MO Delta Chapter at University of Missouri-Kansas City (UMKC) took advantage of the great opportunity to show off UMKC's growing campus and welcome local alumni for this year's conference. Representatives from schools in Kansas, Iowa, Missouri, and Oklahoma, pictured above, enjoyed their time. Activities and networking opportunities were the main attraction along with professional head shots, asking industry professionals questions, and even having their resumes reviewed. The hosts thank everyone who attended and can't wait for next year in St. Louis.

FEBRUARY 24-25, 2023:

District 12

Despite the "snowpocalypse" much of the western U.S. experienced this winter, 24 Tau Bates from District 12 met in Denver, CO, for their annual meeting. This is the first time they have met in person since Rapid City (SD), days before the COVID shutdown. Six of the 16 chapters were unable to send representatives due to weather and other circumstances. Attendees were hosted at the University of Denver and had the opportunity to enrich their understanding of chapter operations by teaching each other through several creative skits and collaborating on District Interactive Exchanges. The conference concluded with a 17-member Alumni "panel" which provided advice on the transition to work-life, tips for success in the industry, and other words of wisdom.

APRIL 15, 2023:

District 13

The conference was held in Prescott, AZ, hosted by the Arizona Delta (AZ D) Chapter at Embry-Riddle Aeronautical University. All nine chapters from across the south-west attended, along with representatives from two alumni chapters. The schedule included an Engineering Futures Session, a new spin on Interactive Chapter Exchange (ICE) called "ICE Speed Dating," and an alumni Q&A panel. Lastly, the group took part in AZ Delta's spring initiation with eight new members joining, followed by a dinner on campus.

APRIL 15-16, 2023:

District 14

The Oregon Beta Chapter hosted their conference on the campus of Portland State University. Students and Advisors from six collegiate chapters and both local Alumni Chapters gathered to discuss topics such as reporting requirements, chapter/individual awards, and the challenges chapters face as we emerge from the pandemic. **Russ Pierce,** *WA A' 70*, led the group through an Engineering Futures Session which featured highlights of "Leading the Team: Understanding Style and Personality" module. This was the first in-person D14 Conference since 2019.

NORTH CAROLINA ETA

NORTH CAROLINA ETA

joined the Tau Beta Pi family on March 18, 2023. Councillor George Youssef, *NJ Γ '01*, served as official installing deputy of the Association's 260th (254th active) collegiate chapter. Joining him at Western Carolina University (WCU) in Cullowhee, NC, were District 4 Directors Joseph P. Blackford, DEN, *DC Γ '95*, and Lisa C. Lombino, *NY N '97*, and Director of Alumni Affairs Tricia E. Gomulinski, *SD A '98*.

The Tau Beta Psi local engineering honor society was represented by President Allison H. Royer; Secretary Gabriel F. Kranenburg; and Chief Advisor Martin L. Tanaka, Ph.D., P.E., *NC A '92*, at the 2022 Convention which granted them a chapter. Kranenburg and Royer were honored to become the first members of their chapter during the model initiation at Convention.

INITIATION AND INSTALLATION

A total of fourteen students and five alumni comprised the charter members of the chapters, all of whom participated in the initiation and installation activities held in the Belk Building on the WCU Campus.

The installation team was led by the five Association Officials listed previously and included: Matthew G. Cardell, *NC Δ '23*; Marissa A. Knofczynski, *TN A '23;* Gabriel F. Kranenburg, *NC H '23*; Etienne Lambert, *NC Δ '23*; Martin L. Tanaka, *NC A '92;* and Allison H. Royer, *NC H '92.* The ceremony was witnessed by Ann L. Bass, *MN A '81*; E. Randolph Collins Jr., Ph.D., *NC A '84*; G. Bruce Gehrig, Ph.D., P.E., *UT B '84*; Hugh Jack, Ph.D., *MI Λ '84*; M. Sean June, *NY Π '99*; Chief Advisor Donald J. Leo, Ph.D., *IL A '90*; Advisor Scott C. Rowe, Ph.D., *TX A '13*; Daniel A. Smith, *NY I '20*; and Advisor David E. Stooksbury, Ph.D., *GA Δ '92*.

Immediately upon conclusion of the formal initiation ceremony, new members were constituted a new chapter in the ceremony of installation conducted by Councillor Youssef. The ceremony included a presentation and reading of the chapter's charter and formal election and installation of the chapter's charter officers and advisors.

BANQUET

Following the ceremony, participants traveled to the Catafount for pictures and then to Blue Ridge Conference Center for the formal banquet.

NC Eta Chapter Vice President Dustin Pease welcomed the guests and served as master-of-ceremonies.

Executive Director Gomulinski shared the history of Tau Beta Pi, its vision, current membership, and growth over the past 138 years. Dean Collins congratulated the new members and welcomed out-of-town family members and guests. He thanked Dr. Tanaka and the other local society members for their efforts to bring a Tau Beta Pi Chapter to WCU. Next, Dr. Tanaka and Secretary Kranenburg, provided an overview of the society's activities over the past two academic years.

Finally, Dr. Tanaka and President Royer recognized each of the new members and presented them with their membership certificates. Ms. Royer congratulated the new members and expressed her enthusiasm for the work of the chapter in the coming years.

Following the formal activities of the day, many attendees traveled to the Lazy Hiker Local Brewery where Dr. Tanaka had arranged for entertainment by a band from Charlotte, *Red Dress Army*. The members and guests enjoyed the opportunity to socialize after a busy day.

First Officers (left to right)
Scott Rowe, Dustin Pease, Allison Royer,
Gabriel Kranenburg, and Martin Tanaka.

Charter Presentation (left to right)
Curtis Gomulinski, George Youssef,
Allison Royer, and Martin Tanaka.

Initiation Team (left to right)
Joseph Blackford, Tricia Gomulinski, Curtis Gomulinski, Lisa Lombino, Marissa Knofczynski,
George Youssef, Allison Royer, Etienne Lambert, Martin Tanaka, Gabriel Kranenburg, and Matthew Cardell.

The Charter Members and Advisors of North Carolina Eta

MASSACHUSETTS KAPPA

All photos taken by Sean Mahon (Merrimack Photography Club founder and president).

MASSACHUSETTS KAPPA

was the final Tau Beta Pi Chapter installed in 2023 on March 25. Vice President Ronald M. Hickling, *CA E '80*, was the official installing deputy of the Society's 261st (255th active) collegiate chapter, assisted by Executive Director Curtis D. Gomulinski, *MI E '01*, and District 1 Director Lauren J. Swett P.E., *ME A '04*, at Merrimack College.

On behalf of the Merrimack College Engineering Honor Society, President John Liddy, Vice President Brandon T. L'Heureux, and Chief Advisor James Kaklamanos, Ph.D., *MA Δ '08*, traveled to the 2022 Convention which granted a chapter to the local society. Liddy and L'Heureux were among the petitioning society representatives initiated during the model initiation at Convention.

INITIATION AND INSTALLATION

The McQuade Library Auditorium on the campus of Merrimack College was the site of the formal ceremonies of initiation and chapter installation. The initiation was led by three Association Officials and also included: Advisor Paula L. Bordogna, *MA A '80*; Advisor Cynthia H. Carlson, Ph.D., P.E., *MA Z '93*; Henry H. Houh, Ph.D., *MA B '89*; James Kaklamanos, Ph.D.; Stephen J. Kmiotek, Ph.D., P.E., *MA A '80*; Brandon T. L'Heureux, *MA K '23*; John Liddy, *MA K '23*; and Kaleigh C. Walsh, *MA K '24*. The ceremony was witnessed by TBΠ members Wayne D. Fernald, *MA E '70*; Lisa C. Houh, *MA A '91*; Robert F. Rainville, *MA Z '68*; and Victor J. Skowronski, Ph.D., *NJ A '71*. Sixteen undergraduates, twenty-three alumni, and one eminent engineer comprise the charter members.

After the initiation ceremony concluded, Mr. Hickling constituted the new members as the newest chapter during the formal installation ceremony. The ceremony included the reading and presentation of the charter and formal election and installation of the chapter's charter officers and advisors.

BANQUET

After the ceremony, the new members and guests journeyed across campus to Cascia Hall for the installation banquet. After an introduction by President Liddy, he turned it over to Chief Advisor Kaklamanos who served as master-of-ceremonies.

Dr. Kaklamanos provided an overview of the history of Merrimack and the local honor society and emphasized how important this was in the history of the college. Dean Jose R. Sanchez, Ph.D., *IL Δ '00*, congratulated the students and Dr. Kaklamanos for their perseverance in establishing a chapter at Merrimack. He expressed enthusiasm for the growth of Merrimack's engineering program and the great things ahead. Sara Francis, *MA K '20*, past president of the local honor society, shared her excitement at the installation of the chapter and encouraged the students to continue their good work.

Mr. Gomulinski shared his history of involvement with Tau Beta Pi and encouraged the new members to identify their own passions in life and to enjoy their time as students. Mr. Hickling shared his own involvement with the Association and the rewarding opportunities that membership offers. Ms. Swett, District 1 Director, welcomed the new members to the district and emphasized the important role people play in TBΠ and to stay connected and in touch after graduation.

After President Liddy and Chief Advisor Kaklamanos presented certificates to the new members, Dr. Kaklamanos closed by quoting Ferris Bueller: "Life moves pretty fast. If you don't stop and look around once in a while, you could miss it."

First Officers (left to right)
Hannah Goldthwait, John Liddy,
Brandon L'Heureux, and Sean Janerico.

Charter Presentation (left to right)
Curtis Gomulinski, Ronald Hickling,
John Liddy, and James Kaklamanos.

Initiation Team (left to right)
Front: Henry Houh, Kaleigh Walsh, Paula Bordogna, Cynthia Carlson, and Brandon L'Heureux.
Back: Stephen Kmiotek, Ronald Hickling, Curtis Gomulinski, Lauren Swett, John Liddy, and James Kaklamanos.

Charter Members of Massachusetts Kappa

Alumni Giving

Eaves Club
Karleen K. James
SD A '86
Supporting ΤΒΠ is helping to develop the next generation of leaders and pioneers.

Downing Club continued from page 27

GA A — Crawford, David William '61; Dixon, Daniel Benjamin '63; Flegal, William Malcolm '66; Glover, Edmund Cook '60; Hair, J.G. Graham '59; Hedrick, A. Fred '69; Northington, Peyton Alexander '78; Oslick, Rochelle '83; Peatman, John Burling '56; Taylor Jr., George Brown '75; Taylor, Hubbard Harvey '75; Tundermann, John Hayes '63; Tyler, Stephen M. '84
GA B — Jones, David Neal '92
IL A — Anderson, Donald Denton '80; Bein, Robert Walter '56; Clark, Elliot Andrew '83; Jonas, Steven Geza '66; Kasik, Phillip Mark '68; Le Blond, Peter Carl '75; Resman, Tom A. '84; Smith, Leslie Garrett '48; Szumski, Daniel Raymond '80; Vogel, Frederick M. '80; Wallace, John Robert '61
IL B — McBlaine, Michael Richard '75; Nelson, John David '60; Olin, John G. '61; Ziomek, Arkadiusz '10
IL Γ — Gubisch, Roland Werner '64; Henry, Thomas Peter '73; Wilsak, Richard Allen '78
IL E — Garfield, Bill Michael '83
IL Z — Wislek, Michael Anthony '89
IN A — Alexander, John Albert '56; Bower, William Walter '67; Brodie, Bruce Rogers '65; Clodfelter, Donald Glen '55; Corns, Joseph Benjamin '52; Cripe, Duane Byron '82; Cross, Perry Gregory '74; Dries, David James Anthony '76; Edwards, Deborah Jane '85; Eykamp, G. Richard '56; Hall, Thomas Wayne '67; Hedegard, Alan Harald '64; Hendryx, Kevin Scott '81; Kettering Jr., Floyd Firman '63; Satterly, Paul Benson '82; Simnick, James John '74; Sosnay, Richard Gordon '66; Tirio, Mark Charles '73; Travis, John Charles '47; Tveter, Steven Elliot '74; Warren, Scot William '83; Wright, Ronald Robert '71
IN B — Marum, Steven Edward '73; Rosenbarger, Donald Glenn '78; Schipper, Michael Joseph '82
IN Γ — Farrow, Michelle Dorice '83; Fitzgerald, Edward John '86; Flynn, Michael Joseph '89; Galeziewski, Thomas Michael '78; Murray, Francis O'Brien '68; Springer, Denis Eugene '67; Yogan, Thomas James '82
IN Δ — McAlear, Hugh M. '64
IN E — Ali, Afzal '78; Liechty, Douglas Lynn '73; Tyler, Thomas Lee '54
IA A — Cerwick, Joel Alan '66; Hicks, Roger Dale '57; Keene-Mason, Alice Fay '05; McGinnis, Bryan John '63; Owens, David Andrew '91; Puffett, George E. '83; Rerucha, Thomas Lee '81; Smith, William James '66
IA B — Boldt, Donald Bernard '57; Dawson, Robert Jerrold '60; McSwiggin, Thomas G. '61
KS A — Bradley, Richard Leland '59; Conner, Harold Wayne '54
KS B — Hockett, James Keith '66; Straka, James Lavern '89
KS Γ — George, Darin Lynn '86; Lebak, James Michael '89
KY A — Congleton, Stephen Douglas '79; Cook, Robert Henry '74; Freeman, Richard Edwin '73; Midkiff Jr., Kenneth Clark '79
KY B — Baldock, Steven Hugh '01
LA A — Armistead, William T. '71; Champagne, Sidney Alfred '68; Corripio, Armando Benito '63
LA B — Bourgeois, Brian Steven '82; Bourgeois, Edit J. '91; Marin, Justo Enrique '79
LA Γ — Caruthers, Shelton DeWitt '89; Jenkins, James S. '80; Mercer, Andy A. '59; Thomas, Robin Carol '92
LA Δ — Barbay, Norman John '74; Halkiades, George '63; Key, John Autry '75
MD A — Beatty Jr., Millard Fillmore '59; DiGiorgio, Joseph Brun '54; Gitomer, Steve Joel '64; Guzy, Jeffrey David '83; Hall, H. Thomas '56; Hartlove Jr., Charles L. '76; Lang, John Charles '72; Lu, Stanley '95; Sutera, Salvatore Philip '54
MD B — Amtmann, Louis Gerard '66; Brownstein, Barry Jay '68; Deschere, David Stewart '82; Himes, Doug Lamar '82; Iacangelo, Gerard Felix '80; Kanofsky, Hal Steven '70; Marks, Richard William '70; Moorcones, Joseph John '67; Poulter, Harry David '88; Roberts, Victor David '64; Roth, W. Clint '78; Tregoning, Robert Lee '87
MD Γ — Hauge, Todd Allen '83; Quint, John H. '84
MA A — Achilles, Heather Dale '83; Ahern, Michael Francis '78; Auclair, Jared Robert '01; Burgarella, John Paul '50; De Andrea, Paul John '75; Downs, Allen Gybbon '75; Haringa, Glenn E. '74; Wielk, Michael Christopher '86; Wright, Neal Timothy '76
MA B — Balazs, Phillip Terry '69; Bishop, Peter B. '70; Broughton, William Joseph '61; Dodson, John Orville '68; Efimba, Bob E. '63; Ferguson, Keith McDowell '62; Greene, David Lockwood '68; Hilbing, James Henry '86; Klein, Harrison John '71; Rogers, Peter Todd '82; Slifka, Richard Barry '61; Smith, Kenneth Alan '58; Vlahakes, Gus John '71; Weinberg, Marc Steven '70; Wrinn, Joseph Francis '75
MA Δ — Adams, Randolph Keith '70; Babaian, Peter Martin '99; Hildebrant, Eric Michael '92; Ingalls, David Peabody '51; Milauskas, Ronald Joseph '62; Munsey, Michael C. '89; Russell, Jack Hesseltine '54; Savage, Paul David '77; Smeglin, Anthony Michael '76; White, Edward A. '47
MA E — Calvo, Alberto Bruno '70; Levesque Jr., George Emile '70; McEachern, James Francis '70; Présumé, Hantz Antony '89; Truxel, George Henry '68; Vesce, Paul James '64
MA Z — Beliveau, Thomas Joseph '69; Benwood, Bruce Robert '69; Ewell, Kenneth Albert '68; Philbrook, T. Varnum '73; Stumpf, Christian Reeve '82; Tebo, Dave L. '88
MA Θ — Allen, Karen Leonard '89; Chapman, David M. '83; Gregg, John Edward '84; Paul, David Dickson '92
MI A — Chaffee, Stanley Wendell '74; Othmer, Hans George '65; Regenstreif, Joyce '78; Shannon, David Harlow '59; Suszko, Andrew M. '73; Woelzlein, Wilmar Marvin '51
MI B — Bekins, Randell Lee '80; Bentley, James Herbert '57; Durfee, George Lee '51; Glidden Jr., Harry James '65; Lindgren, Douglas LeRoy '69; Link, Barbara Ann '77; Mattson, James Arthur '70; Plutchak, Raoul E. '62; Sauer, Dan Michael '05; Stehulak, Edward Stephen '86
MI Γ — Blair, David John '57; Boesiger, Edward Alfred '82; Brown, Marshall Joel '96; Campbell, John Alexander '62; Capelli, Ronald B. '73; Earl, George Clayton '66; Fertel, Howard Kevin '79; Hansen, Peter Ernest '61; Leeds, Thomas Murray '85; Macika, Raymond Edward '86; Margolese, Kate '84; Maugh, Roger Edward '55; Nobunaga, Alan Shizuo '83; Othman, Roger Mohamad '74; Rigge, Lawrence Allen '83; Snyder, Robert Joseph '77; Wentzel, Richard Dimert '60; Wingard, Joseph '80; Winter, Steven D. '81; Zechel, Gary Michael '62
MI Δ — Caste, Richard Alan '68; Dolan, William John '62; Kaunelis, Pranciskus Saulius '69; Rutkowski, Paul John '69
MI E — Basberg, Douglas Spencer '69; Capraro, Michael A. '70; Klaetke, George H. '55; Mertz Jr., Harold J. '61; Mutzelburg, Ronald Edward '68

Downing Club
Robin C. Thomas
LA Γ '92
Supporting ΤΒΠ supports bigger dreams and accomplishments in engineering.

Ben J. Cote
LA Α '13
Proud to be a part of ΤΒΠ and support the way for future aspiring engineers!

MI Z Foraker Jr., David Ernest '58
Kovacs, Robert Lewis '86
Ricker, Jonathan Bruce '97
Roth, Maureen Lynn '91
Verhoff, Stephen John '00
Zywiol, Gary Steven '76
MI K Seymour Jr., Richard L. '97
Sikkenga, Chad Douglas '98
MN Α Christensen, Tom Michael '79
Halladay, Henry Earnest '64
Hegna, Harwood Allan '69
Holm, John David '62
Maus, Brian Wayne '81
McDonald, Dan William '82
O'Leary, Stephen Holmes '69
Van Essen, John Scott '74
MS Α Backus, Alan O. '78
Backus, Patricia Michel '78
Clements, Nathan Scott '96
Hodge, B. Keith '65
Seitz, Thomas Bingham '63
Tisdale, Stanley Ray '78
Wachs, John Jay '71
MO Α Brownfield, David Lee '68
Hea, James Peter '68
Hutchinson, Darrell Byrd '74
Kehoe, Martin James '72
Potter, Charles Jarrett '71
Woolsey, Rod '70
Zimmerman, Mary Margaret '87
MO Β Hendrickson, Richard Charles '53
Jenkins, Glenn Willard '59
Leitterman, Dennis W. '76
McJimsey, Edward Clair '71
Myers, Kenneth Raymond '72
Pannone, Gregory Michael '82
Scherrer, Paul Keith '71
Schwent, Dale Gerard '84
Unnerstall, James Anthony '56
Willoughby, Ronald D. '73
MO Γ Eddy, Jim Dale '80
Gatley, William Stuart '56
Goldring, Stanley '64
MT Α Kolb, Robert C. '61
MT Β Jackson, Darron Boyd '86
NE Α Claar, Stephen Beryl '73
Cowling, Edgar Charles '75
Martin, John Craig '85
Matthews, Deborah Jo '82
Paxton, William Glenn '87
Shanmugam, Alagappan '83
Van Skiver, Max Alan '75
NH Α Amazeen, Bruce Edward '65
Greene, Prescott '57
Major, Alfred Napoleon '50
NJ Α Allen, Samuel Miller '70
Bendelius, Arthur G. '58
Compton, Joanne B. '79
Denzer Jr., George Charles '61
Stein, Gary Richard '67
Swanson, Frederick James '68
Turgyan, Terrence Joseph '75
NJ Β Bubenick, David Virgil '73
Nixon, Allen Mackenzie '62
Richards, John Reed '76
Shalayda, Robert George '73
Shelestak, Larry J. '75
Starr, James W. '73
NJ Γ Castaldi, Frank James '69
DeWaal, Johannes '70
DiDomenico, Michael John '65
Dooley, Ronald M. '64
Furtado, Victor Cunha '58
Gupta, Punit Kumar '96
Husson III, Matthew Alexander '66
Moeller, Peter Allan '78
Otterbein, Richard Charles '71
Puhan, Robert '75
Spinnler, Gerard Francis '75
Tabor, Vincent Joseph '75
Tubello, Jeffrey '76
Zierau, Siegfried Max '61
NJ Δ Brown, Geoff Scott '83
Coco, Elizabeth Halliday '87
Whitesides Jr., Lawson Ewing '68
NM Α Aragon, Frank Garcia '77
Bradt, David Jay '81
NM Β Donnelly, Carolyn Elaine '01
Salas, Thomas M. '85
NM Γ Perna, Trina '84
NY Α Chaudhry, Sohail S. '74
Morgan, Thomas Arthur '78
NY Β Bickley, Thomas Duane '78
Ragonese, Louis John '56
NY Γ Bergenthal, Jon Francis '75
Bond, Paul William '72
Gardner, John Herbert '66
Huie, Joseph Albert '52
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, Leon Anthony '78
NY Δ Elko, Michael Joseph '89
Frantz Jr., Rolf A. '66
Frederick, Thomas Robert '87
Goldstein, Steven Mark '81
Heineman, Duane Thayer '58
Humphrey, John Morgan '67
Kuehne, Don L. '73
Logan, Joseph Skinner '56
Reth, Thomas Bernard '64
Reynolds, David Allen '71
Roseman, Ann Lynn '81
Schwenker, David William '67
NY Ε Brodsky, Wesley G. '71
Ueber, Russell Charles '61
NY Ζ Gersten, Marvin Charles '60
Keller, Norm Kurt '58
Sindel, Fred Hans '59
NY Η Boland, Peter Lewis '69
Kaplan, Howard Ronald '55
Welk, William '79
NY Θ Baldwin, Alan Richard '70
Dec, Eugene Bernard '72
Grubb, Mike Alan '78
Newman, Mitchell James '81
Thomas, John Anthony '86
Ziki, Ann Louise '86
NY Ι De Fazio, Michael Joseph '67
Hartmann, Hans Gustav '70
Teitelbaum, Howard Allan '79
Trentacosta, Joseph Daniel '69
NY Κ Dennis, William John '74
Hajim, Ed '58
Muller-Girard Jr., Otto '89
NY Λ Cilento, Eugene Vito '73
Fillo, John Paul '74
Madia, Michael '81
NY Μ Hurewitz, David Lewis '64
Montgomery, Michael Earl '75
NY Ν Barnes, Robert Edward '84
Humphrey, David Kenneth '67
MacNeil, Randall Lewis '69
Mann, Michael '77
Pardini, Thomas John '77
Theoclitus, David Thomas '86
NY Ξ Bruzzone, Anthony Federick '12
Machuca, Luis Arthur '69
Mohan, Anne Elizabeth '09
Mohan, Marguerite Anne '04
Snyder, William Joseph '81
NY Ο Doynow, Donald '75
Hofmann, Linda '79
Jankowski, Cecelia '81
Kadysiewski, Stephen Joseph '76
Lumish, Stan '78
Ribuffo, Peter Vincent '79
Williams Jr., Robert C. '83
NY Π Barber, R. Todd '87
Grosch, David A. '85
Hoelscher, James Roy '71
Turner, Clayton Phillip '90
NY Ρ Wong, Wai Kin '85
NY Τ Chacko, Vinny James '09
NC Α Alexander, Ralph Bell '76
Allen, William Dowell '88
Capps, Dickson Michael '75
Doggett, William Ray '86
Frierson III, J. Lawrence '66
Teague, Lisa Jones '81
Weirs, Gregory '91
Yohman, Donald Forest '73
NC Γ Baxley, William Allison '55
Behnken, Kenneth Charles '67
Prevatt III, Richard M. '77
Wine, Charles Joseph '59
ND Α Dahlin, Earl Charles '58
Fay, James Maurice '82
Nyhus, Orville Kenneth '63
ND Β Jesh, Mark Steven '86
OH Α Beach, Robert Chester '56
Bracy, Kevin Norman '93
Cross, Matt David '05
Diederich, Norman Francis '64
Hoh, Ka-Pi '84
Holcomb, J. Eric '82
Koch, Carl Conrad '59
Moorhead, Kenneth Wayne '50
Oblak, John Michael '62
OH Α Oravec, Joan Marie '71
Richenbacher, Wayne Edward '75
Tomasch, Walter John '52
OH Β Dobashi, Harry Hideo '68
Lockard, Chad William '01
Mayer, Robert Lawrence '69
McCune, Larry Clinton '63
Olt, Richard A. '80
Ruebusch, Robert Joseph '70
Triplett, William James '76
OH Γ Edwards, Dale C. '61
Heath, J. Allen '78
Johnston Jr., Robert Paul '67
Kinzel, Evelyn K. '69
Pierce, William Sellers '55
Price, Ted Walter '59
Riedel, Nelson Andrew '67
Risch, Gary Allan '76
Shade Jr., W. Norm '70
Taylor, Ashley Scott '84
OH Δ Davidson, Lee A. '65
OH Ε Kubinec, William Richard '67
OH Ζ Babula, Maria '89
Busbey, Bruce C. '84
Herman, Madison Rachelle '13
Novak, Eugene Clark '59
Rober, Kenneth Jerome '68
OH Η Beurket Jr., Raymond Thomas '63
Breuder, Andrew Joseph '70
Clarke III, DeFrance '81
Eggers, James Arthur '72

Alumni Giving

FEBRUARY 1 — APRIL 30, 2023

Downing Club continued from page 47

OH Η
Freyer, Gustav John '60
Gilbert, John Ellis '70
Gressang, Randall Vernon '72
Jumper Jr., George Yount '66
Niemeyer, Joseph Bernard '85
Palazotto, Anthony Nicholas '55
Schmoll, Joseph Herman '81
Van Veldhuizen, David Allen '99

OH Θ
Decker, John William '65
Evanzia, Gregorio Patrick '64
Kamowski, Dennis Daniel '73
Keller, Robert Lee '63
Kramer, Lawrence Joseph '62
McEldowney, Ralph A. '87
Sero, Raymond James '67
Usleman, Robert T. '71

OH Κ
Brattoli, Mark A. '79
Carver, Robert Michael '87
Krause, Leonard Edward '76
Wielopolski, Richard John '76

OH Λ
Chegar, John Thomas '90
Folk, Joseph William '98
Gwin, Russel Willis '85
Hallochak, Andrew John '77
Stiver, Alan Wayne '86

OH Μ
Hill, Leah Beth '10
Montgomery Jr., William Lee '86

OK Α
Dotson, Neil A. '84
Hysinger, T. '63

OK Β
Blais, Roger N. '66
Schmude, Donald Jude '86

OK Γ
Dean, Philip Maxwell '74
Hanes, Larry Lewis '76

OR Α
Anderson, Joseph Russell '66
Loughmiller, Bert Edward '64
Shaw, James Walter '70

PA Α
Edwards, Gilbert Spencer '67
Kankelborg, Carol C. '86
Lentz, Robert Raines '65
Melvin, William Larkin '89
O'Hara, John James '73
Ortlieb, John Richard '53
Pondo, Fredric '75
Tomkiel, Stanley Anthony '72

PA Β
Bradt, Andrea '76
Gibson, John Parke '64
Krolick, Ronald David '83
Matthias, Tracey Dawn '89
Weston, Matthew Wayne '93
Wilt, Kenneth Douglas '84

PA Γ
Kornuta, Nick Joseph '81
Sack, John Stuart '75

PA Δ
Baxley, John Hirst '88
Black, David L. '83

PA Ε
Amman, Richard Walter '64
Guest, Frederick Charles '59
Krein, Philip T. '78
Kulicki, John Milton '65
Matsumoto, Tadashi Campbell '60
Murgas, William Joseph '53
Schroeder, Karl Richard '49
Steel, Henry William '58

PA Ζ
Browne, Joseph Dominic '60

PA Η
Keil, Alan James '72

PA Θ
Coyle, Todd Frederick '77
Dever, Patrick Brian '94
Girondo, Dominic Peter '70
Lacz, Walter '69
Norris, Clinton Joseph '61
Ryan III, Arthur Peter '65
Threston, Joseph Thomas '57
Woods Jr., Howard James '77

PA Λ
Christian, Rob Francis '07
Hovanec, Andrew Stephen '58
Musselman, Thomas Andrew '73

PR Α
Irizarry, Arcelio '86
Novomestky, Frederick '69

RI Α
Foster, Nigel John '81
Newman, Gary Robert '73

RI Β
Fletcher, Gilbert Alan '68
Lamoureux, Suzanne May '82
Silva, Ronald Ernest '74

SC Α
Cox Jr., Jacob H. '03
Gramling, Jeffrey J. '85
Gray Jr., Blaine Edward '72
Mims Jr., Paul Wilson '71
Moose, Thomas Caswell '72
Prothro, Joseph E. '63
Rast Jr., Heber Edward '63
Wayne, Hugh Swinton '49
Wilson, Rick Lane '81

SC Β
Haggerty, N. Kent '72
Lang, Christine Marie '80
Wilson Jr., Robert Lewis '69

SC Γ
Adkins Jr., Henry Grady '66
Baggett, Charlie Cleveland '63
Cochrane, Jerry Wilson '55
Gooley, Thomas Joseph '55
Kelly, Robert Thomas '86
Pastrick, Hal Lee '58

SD Α
Beck, Carl William '83
Brass, Lorin Lee '75
Eisenbraun, Daniel Dale '75
Kroetch, Christopher Allen '06
Massie, Larry Wayne '82

TN Α
Bowers, Bob '68
Burnett, William Allen '71
Evans, Colby Russell '94
Hickman, Charles Edward '57
Hunt, Roy Joe '67
Meriwether, George H. '74
Moore, Terry M. '67
Tarrant, Charles Harrington '57
Totten, Barry Nelson '82
Weinberg, Brent Derek '01
Zimmerman, James L. '58

TN Β
Brown, Kevin George '85
Burnett Jr., Wilton Wright '67
Johnston, Stephen J. '76
Macchio, Gregory John '84
Morton, Wayne King '63
Zabriskie, Kenneth Andrew '80

TN Γ
Moyers, Robert Lewis '05
Thompson Jr., W. William '68

TN Δ
Luttmann, Lisa M. '82
Luttmann, Mark Joseph '82
McLeod, Jeffrey Keith '83

TN Ζ
McGlumphy, Jonathan David '02

TX Α
Dodge, Nathan B. '68
Garrett, Darrel Wayne '70
Horton, Larry Earl '83
Huang, Lawrence Peter '81
Hurst, Terry Lee '76
Nix Jr., Cecil Anson '57
Rosales, Julian Francisco '83
Whitesides Jr., John Lindsey '65

TX Β
Marasco, David Foster '87
Moss, Michael William '83
Talati, Deepak A. '84
Uher, Edward L. '65

TX Γ
Fisher, John David '70
Horn, Kenneth Porter '61
Mohr, David Norman '72
Wolfram Jr., William Robert '68

TX Δ
Balusek, David Kiser '82
Boutte, Jennifer Lynne '89
Brittan, Charles Laury '65
Eng, Ronald Wey '71
Herring, Robert Lee '65
Linn, William Ray '81
McClellan III, W. Roy '74
Smith, Manning DeWitt '64
Whitney, Herbert Ward '57

TX Ε
Herrmann, Edwin Peter '67
Martin, Samuel Ray '83

TX Ζ
Broussard, Lance Armance '97
McCaleb, Jesse Earl '64

TX Η
Brewster, William Howard '94
Godwin, Albert Eugene '84
McBay, Michael Raymond '73
Schaeper, Wilfred H. '76
Tepper, John C. '82
Williams, Larry Donal '80

TX Θ
Goolsby, Tommy D.W. '84

TX Κ
Daniels, Jerry D. '79
Jolley, Lawyer Curtis '79

TX Λ
Carter, Jason Oliver '87
Carter, Norhanani '87
Hinojosa, Juan Jose '84

UT Α
Gehmlich, Dietrich Karl '53
Lamph, Jane Ann '80
Malmquist, David August '62

UT Β
Thompson, James Rowley '76

VT Α
Bouchard, Donald Raoul '81
Shatz, Jonathan Ary '82
Wilson, Adam Bertrand '89

VT Β
Clark, David Thomas '81
Melzar, Jonathan Preston '85

VA Α
Conway Jr., George Franklyn '70
MacKay-Smith Jr., Alexander '59
Price, Michael Glendon '74
Shirley, David Eugene '65

VA Β
Gibbins, Martin Neil '78
Mann, Richard '75
Smith Jr., Sidney Crawley '63

VA Γ
Austin, Andrew Stone '89

VA Δ
Michael, Glenn P. '66

WA Α
Brewer, Brian J. '82
Kreidler, William Mark '74
McNees, Jackson Lowry '68
Ogg, Dan Grant '85
Oiye, Martin Yasuyuki '76
Otteman, Lloyd Gilbert '54

WA Β
Aaserude, Robert Gerald '84
Anderson, Kyle Joseph '03
Groat, J. Everett '94
Hyde, Gary M. '64
Nemitz, Rodney Eugene '86
Turi, Michael Allen '07
Wahl, David John '62

WA Δ
Campion, Paula JoAnne '00

WV Α
Baker, Walter Lee '74
Boggs, Mark Steven '80
Fleming, Arthur Johnson '77
Schuler, Arthur Kurt '71
Skujins, Margaret S. '69
Skujins, Ojars '68
Spence, Peter Larkin '80

WV Β
Farmer, Harry Clayton '70
Lorkowski, Tim Walter '93

WI Α
Antolovich, Stephen Dale '62
Buehring, William Arthur '67
Hoffman, Carl A. '85
Johnson, Joseph William '79
Martell, Donald Louis '60
Trnka, John Thomas '69

WI Β
Kriofsky, Tom Allan '60
Marcouiller, Roger Albert '60
Murawski, Steven Lee '80
Pelt, Thomas Eugene '70
Penlesky, Richard J. '73
Petrie, Dennis James '78
Pickett, Mark Allan '72
Wolf, Thomas Francis '59

WI Γ
Merkel, Brian John '81
Stachowicz, Robert Walter '70

WI Δ
Gerloff, James Robert '00

WY Α
Riley, Robert Hugh '82
Scharton, Craig Allen '85
Simon, Ronald Wayne '81

CHAPTER ETERNAL

Continued from page 34

UTAH

BETA UT B

Bargeron, Kim Gordon, *'63*, August 7, 2017.

VERMONT

ALPHA VT A

Grant, Carl Henry, *'60*, December 17, 2022.

VIRGINIA

ALPHA VA A

Starnes, William Thurman, *'45*, no details.
Stuart Jr., Walter Preston, *'49*, Nov. 11, 2011.
Fishback, James Kemper, *'54*, Dec. 5, 2016.
Donoho, Thomas English, *'59*, Sept. 9, 2022.
Griffith, David Edward, *'66*, Sept. 4, 2021.

BETA VA B

Morrissette, Robert Randall, *'45*, July 1, 2015.
Jackson, Samuel Wilson, *'48*, April 12, 2015.
Ford, Leonard Neal, *'51*, March 6, 2019.
Lee Jr., Edwin Eugene, *'51*, Nov. 5, 2015.
Detterman, Robert L., *'53*, Dec. 28, 2022.
McGee, Jack Donald, *'53*, July 21, 2018.

DELTA VA Δ

Berry, William Willis, *'54*, April 4, 2012.
Hogan, Shawn Gilbert, *'06*, October 17, 2012.

WASHINGTON

ALPHA WA A

Egtvedt, Myron Duane, *'51*, July 29, 2017.
Speece, Daymond Roy, *'54*, Dec. 20, 2022.
Holmberg, Neil A., *'56*, August 3, 2021.
Okita, Richard Y., *'56*, April 17, 2022.
Wiser, Denzel Nolan, *'56*, Sept. 11, 2022.
Plantz, Michael Thomas, *'70*, no details.

BETA WA B

Oakley, Fanning Tucker, *'53*, no details.
Schnidrig, Herman Edward, *'54*, July 23, 2021.
Bagnall, Larry Owen, *'57*, July 29, 2016.
Fulton, William Edward, *'73*, March 4, 2023.

WEST VIRGINIA

ALPHA WV A

Ritchie, Ray Roff, *'55*, January 27, 2023.
Wiley, Thomas Stanley, *'57*, Sept. 15, 2019.
Chancey, Harold Ray, *'61*, March 22, 2023.

BETA WV B

Dancy, Edsel R., *'57*, December 28, 2022.
Larch, Ronald James, *'72*, Dec. 14, 2000.

WISCONSIN

ALPHA WI A

Culver, Frederick Howard, *'53*, Dec. 20, 2022.
Foxwell, Leo George, *'53*, February 1, 2020.
Volkmann, Ronald Jack, *'54*, Feb. 12, 2018.
Weyres, James Bernard, *'55*, Feb. 25, 2011.
Woolhiser, David Arthur, *'55*, Aug. 19, 2022.

BETA WI B

Reimers, Robert, *'56*, May 29, 2019.
Jacobs Jr., Edmund John, *'62*, Oct. 7, 2018.
O'Neill, Richard Francis, *'73*, April 22, 2023.

ASSOCIATION BRIEFS

The Indy tour group in front of the tower and on the track with the Yard of Bricks

Leonard Weitman and Meryl Keeler

ALUMNI ACTIVITY:

INDIANAPOLIS (IN) ALUMNI CHAPTER

On May 7, the Indy Alumni Chapter hosted a "Kiss the Bricks" tour at the Indianapolis Motor Speedway that included a guided track tour and museum admission. The event was attended by twelve alumni and guests, including two out-of-town ΤΒΠ alumni chapter presidents: **Teresa J. Hutton,** *WI B '91*, and **Leah B. Hill,** *OH M '10*, from Milwaukee (WI) and Dayton (OH), respectively. After the tour, there was a social at Daredevil Brewing.

A special thanks to **Evan F. Bishop,** *IN A '18*, Indy AC events director, for organizing the event.

Thanks to **Steve C. Meyer, P.E.,** *MO B '84*, for the image. Contact the chapter at: *tbpindy@gmail.com*

ALUMNI ACTIVITY:

PORTLAND, OREGON ALUMNI CHAPTER

Earlier this spring, Oregon State University hosted a Professional Development Seminar (PDS) put on by the Pacific Northwest Chapter of SEMI, the semiconductor industry association. Portland AC president **Leonard B. Weitman,** *OR A '78*, was the moderator for the PDS and the OR Alpha Chapter.

In addition, **Meryl R. Keeler,** *OR A '25*, a double major in chemical engineering and chemistry, was among the volunteers who assisted in making the event a success.

Thanks to Portland AC president Leonard Weitman for the image.

If you are interested in learning more about the Portland Alumni Chapter, send an email to: *PortlandAlumni@tbp.org*

JOIN AN ALUMNI CHAPTER AND EVEN BECOME AN OFFICER!

Tricia E. Gomulinski, *SD A '98*, Director of Alumni Affairs, works as a software/IT project manager for Teledyne Brown Engineering in Knoxville. Visit: www.tbp.org/?ACcontact or, contact t.gomulinski@tbp.org, to discuss participating with a chapter near you.

TAU BETA PI DAY 2023 RECAP

Thank you Tau Bates for making the tenth annual ΤΒΠ *Pi Day* a nationwide event!

Our alumni and collegiate chapters donated their time, energy, and resources to ensure that this day was celebrated.

As part of this year's ΤΒΠ *Pi Day* Giving Campaign, more than $9,600 was raised to help fund ΤΒΠ programs that benefit the future of engineering.

HQ had a blast tracking and sharing the festivities from pies and pizza to fundraisers and games.

If you missed out on any of the fun, checkout the five videos: *www.tbp.org/?PiDay23* created to commemorate this year's Tau Bates who made it so special. See you next year!

California Sigma Chapter (UC Santa Barbara) members wearing their original design *Pi Day* shirts.

Tau Beta Pi Day
3.14.23

The 2023 Tau Beta Pi Day logo developed by the Image & Marketing Conv. Committee.

Advisors and student members at the Michigan Iota Chapter (UM-Dearborn) form a human Bent during their ΤΒΠ *Pi Day* celebration.

WELCOME DISTRICT 13 DIRECTOR

Scott W. Schmucker, Ph.D., *OH A '04*, was appointed by the Executive Council as a District 13 Director to a term beginning March 1, 2023, and ending June 30, 2025. He works at Sandia National Labs, Albuquerque, NM, as a senior member of the Technical Staff in the Multiscale Fabrication Science and Technology Development Department. Scott co-invented field-directed sputter sharpening for manufacturing atomic-scale probe tips and has 14+ years' experience in scanning tunneling microscopy, nanofabrication, and atomically-precise manufacturing.

ATTENTION: District 3 Directors **needed** in Pittsburgh & Philadelphia (PA) areas. Job description: *www.tbp.org/?DDjob* and contact Stacey Forkner *s.forkner@tbp.org* Director of the District Program, if interested. See a full list of ΤΒΠ District Directors at *www.tbp.org/?DDs*

STAY CONNECTED

Follow us on social media and tag us, so we can see your ΤΒΠ images using **#taubetapi**.

INSTAGRAM:
instagram.com/taubetapiofficial/

FACEBOOK:
facebook.com/TauBetaPiHQ/

WORDPRESS BLOG:
taubetapiathq.wordpress.com/

TWITTER:
twitter.com/TauBetaPi

YOUTUBE:
youtube.com/@taubetapiofficial

Executive Council MEETING MINUTES

Summaries from Executive Council (EC) Meetings — July 2022 through September 2022.

July 12, 2022
Virtual

Councillor Ron Hickling moved to approve the consent items and the Council approved on a voice vote. Reappoint 11 District Directors to terms ending June 30, 2025, per request from Stacey Forkner and include:

- **Lauren J. Swett,** *ME A '04*
- **Thomas A. Pinkham IV,** *MA E '88*
- **Jon M. Sonsteby,** *PA B '95*
- **Joseph P. Blackford,** *DC Γ '95*
- **Meghan C. Ferrall-Fairbanks,** *FL A'12*
- **Andrew I. Doyka,** *TN Γ '17*
- **Michael J. Hand III,** *MI Γ '11*
- **Teresa J. Hutton,** *WI B '91*
- **Jose E. Suarez,** *LA E '10*
- **Margaret G. Goshert,** *MN A '12*
- **Matthew T. Pittard,** *UT B '01*

Award two Resolutions of Appreciation and one Distinguished Service Award to retiring District Program volunteers:

- **Christopher W. Potts,** *CA Y '16*
  Resolution of Appreciation
  D15 Director
- **Melissa L. Morris,** *WV A '06*
  Distinguished Service Award
  D16 & D4 Director
- **Ian J. Frank,** *NY Π '09*
  Resolution of Appreciation
  Chapter Development Committee

Engineering Futures Appointments to terms ending June 30, 2024:

- **Richard Della Rovere,** *NJ Γ '10*
- **Ellen S. Styles,** *AL Δ '85*
- **Russ W. Pierce,** *WA A '70*

Advisor Committee appointments to terms ending June 30, 2025:

- **Bruce A. DeVantier,** *IL E '77*
- **William R. Goodin,** *CA E '75*
- **Michael W. Griffis,** *FL A '85*

Executive Director Report:

- A survey for the June Meeting will be sent out and recordings posted.
- Tax returns are being finalized and finishing the FY20-21 audit.
- Executive Director Gomulinski and HQ are working on identifying a new auditing firm; the Finance Committee will review the finalists.
- Encouraged the EC to book flights for Convention using the most cost effective option.
- HQ will continue utilizing Conference Direct for logistics of the 2023 and 2025 Conventions.
- Councillor J. Sciacca requested that Mr. Gomulinski prepare a priority list to share with the Governance Committee to determine the priority of General Revision Phase 2.

August 13, 2022
Virtual

Councillor R. Pierce moved to approve the consent items and the Council approved on a voice vote:

- **Eric F. Dorge,** *NY N '82*, as a D8 Director to a term beginning 8/15/22 and ending 6/30/24
- **Elson Y. Liu,** *AZ A '02*, as a D15 Director to a term beginning 8/15/22 and ending 6/30/25
- **Brent J. Barcus,** *NY Γ '02*, as a D9 Director to a term beginning 7/01/22 and ending 6/30/25

Engineering Futures Reappointments to a term ending June 30, 2024:

- **Michael D. Czebatul,** *OK A '92*
- **Cheryl Cheng,** *MI Γ '00*
- **Dennis J. Tyner,** *MA E '85*

Membership Committee appointment:

- **Susan L.R. Holl,** *CA Λ '76*
  to a term beginning 8/15/22 and ending 6/30/24

Convention Officials appointments:

- **Jason A. Abellada,** *FL A '04*
  as Parliamentarian
- **Elson Y. Liu,** *AZ A '02*
  as Credentials Committee Chair
- **Ronald M. Hickling,** *CA E '80*
  as Tellers Committee Chair

Reports of Boards, Committees, and Task Forces: Convention Program Planning Committee

- A written report was made available for the EC to review.
- The Council reviewed the tentative schedule.

Unfinished Business & General Orders: Commit the General Revision Phase 2 to the 2023 Convention

- Mr. Pierce moved that the General Revision Phase 2 document be further refined by incorporating pertinent review comments currently being collected and sent to the 2023 Convention Committee on Constitution & Bylaws. After discussion, the Council approved.
- Vice President R. Alexander moved to establish a General Revision Task Force consisting of members such as Executive Councillors, HQ team members, representatives of previous revision task forces, Association Officials, and alumni interested in or experienced in bylaws revisions, to be named by the Executive Council (EC) at its September 2022 meeting, to oversee the revisions to the Constitution and Bylaws and report back to the EC by July 2023.
- President Youssef moved to amend the motion for the deadline to be November 2022, and the Council approved the amendment on a voice vote. The Council approved the motion as amended.

Review the 2022 Convention Business

- Mr. Gomulinski presented the proposed 2022 Convention business.
  - **Advisors**
    - Review and make recommendations on processes for selecting advisors, retaining advisors, and training advisors
  - **Alumni Chapters**
    - Recommend changes to the operations and activities of the alumni chapters
    - Review and recommend action on a proposal to establish alumni chapter awards
  - **Awards**
    - Select winner of the R.C. Matthews Outstanding Chapter Award for 2020-21
    - Select winner of the R.C. Matthews Outstanding Chapter Award for 2021-22
    - Select winner of the R.H. Nagel Most Improved Chapter Award for 2020-21
    - Select winner of the R.H. Nagel Most Improved Chapter Award for 2021-22
    - Select winner of the J.D. Froula Most Improved Membership Award for 2020-21
    - Select winner of the J.D. Froula Most Improved Membership Award for 2021-22
  - **Chapter and Association Financial Affairs**
    - Establish schedule of reimbursable expenses for future Conventions

- Review unusual delegate expenses for 2022 Convention
- Review the chapter accounts receivable to Headquarters
- Review the auditor's and Executive Director's reports for 2019-20, 2020-21, and 2021-22
- Review and recommend action on a proposal to adjust the provisions on allowable investments

- **Constitution and Bylaws**
  - Review and recommend action on a proposal to establish the position of Director of the District Program
  - Review and recommend action on other proposals related to the Constitution and Bylaws
- **Convention Site**
  - Review and recommend action on invitations to host the 2025 Convention
  - Review and provide consent on changes to hosts for the 2023 & 2024 Conventions
- **Diversity, Equity, and Inclusion**
  - Review materials from the DEI Committee and provide feedback
- **Image and Marketing**
  - Review and recommend action on the marketing image of ΤΒΠ
  - Review and provide feedback on the ΤΒΠ recruitment website
  - Review progress and recommend changes for the update to the ΤΒΠ main website
- **New Engineering Solutions for Tomorrow (NEST)**
  - Review the NEST materials and provide feedback
  - Review the work developed by the prototype chapter AZ Alpha
  - Determine the next NEST EGG for the 2022-23 academic year
- **Petitions**
  - Review and recommend action on petition for a chapter at Lipscomb University
  - Review and recommend action on petition for a chapter at Merrimack College
  - Review and recommend action on petition for a chapter at University of Georgia
  - Review and recommend action on petition for a chapter at Western Carolina University
- **Program Review**
  - Review and recommend action on appeals from chapters to add curricula to their bylaws
  - Review and recommend action on the status of chapters required to appeal programs after the Constitution changes approved in April 2019
- **Resolutions**
  - Prepare the resolutions for presentation to the Convention
  - Prepare recognition materials for members of the Association
  - Review and recommend action on a proposal regarding EC elections and terms
  - Review and recommend action on Ron Hickling filling Scott Fable's vacancy on the Executive Council
- **Rituals**
  - Prepare the Model Initiation for Convention
  - Review and recommend action on a proposal to adjust the language in the ritual to be more inclusive
  - Review and recommend action on a proposal to adjust remote initiation procedures
  - Review and recommend action on a proposal to make the initiation ceremony and ritual public
- Mr. Pierce moved that there be *ad hoc* committees on Advisors, Alumni Chapters, DEI, Image & Marketing, NEST, and Program Review at the 2022 Convention. The Council approved to establish the *ad hoc* committees on voice vote.

Review 2022 Convention Responsibilities:

- Dr. M. Youssef encouraged Councillors to provide preferences for responsibilities during Convention
- The Council identified their initial selections for the roles

Approve the 2023 Budget:

- Mr. Gomulinski presented an overview and current status of the 2023 ΤΒΠ Budget
- Mr. Pierce moved to approve the 2023 ΤΒΠ Budget as presented, and the Council approved on a voice vote
- Dr. M. Youssef thanked Mr. Gomulinski and Mr. Pierce for their assistance in preparing the budget

September 28, 2022
Knoxville, TN

District Program:

- Appoint Michael C. Munsey, *MA Δ '89*, as a D1 Director to a term beginning 9/8/22 and ending 6/30/24
- Award a Distinguished Service Award to Aaron R. Alpert, *CA Α '10*, for 7 years of service as a D15 Director

Engineering Futures (EF) Program:

- Reappoint R. Tracy Choat, *TN Γ '83*, to a term ending 6/30/24

Engineering Futures Facilitators-in-Training appointments to a start term of 10/1/2022 - 6/30/23. All of these individuals are Certified CyberAmbassadors, which means they have completed 9+ hours of training in Communications, Teamwork, and Leadership through the CyberAmbassadors program, which is the source of the new EF curriculum materials:

- **Abraham O. Atte,** *KS Α '20*
- **Carmen I. Daoud,** *WI Α '20*
- **Susan L.R. Holl,** *CA Λ '76*
- **Amy R. Irwin Ball,** *MS Α '91*
- **Prince Kumar,** *TXD Δ '22*
- **Julia Pimentel,** *VA Β '22*
- **Luis F. Torrens Sotomayor,** *PR Α '19*
- **Scott M. Trocchia,** *DC Γ '11*

Convention: Adjust appointments of two members serving as 2022 Convention Officials per request from Mr. Gomulinski

- **Ronald M. Hickling,** *CA Ε '80* as Parliamentarian
- **Wesley R. Repke,** *MI Λ '09* as Tellers Committee Chair

Award Resolutions of Appreciation to 16 chapter advisors, 40 Association Officials, and 2 Headquarters team members. The advisors will be recognized by Mr. Pierce and the Association volunteers by Councillor G. Youssef at the Advisor and Mentor Banquet on Friday evening. Mr. Gomulinski will recognize the HQ team members during the Friday evening banquet.

Chapters:

- Approve a petition to formally charter the "Kansas City Alumni Chapter" upon the successful completion of their two-year provisional period

Reports of Officers and Officials:

- Ms. Alexander reviewed the Convention roles and responsibilities.
- Dr. M. Youssef will be delivering her report to the Association Officials Meeting at the First Business Meeting at the Convention.
- Secretary M. Peterson discussed a potential task management system with Mr. Gomulinski.
- Mr. Gomulinski provided an update on the executive leadership of ACHS; the FY22 audit process is still ongoing and contracts with the new auditors are pending until the FY22 audit is complete; in the process of exploring a project/task management system that may be used for the Council in the future; reviewed open action items for the Council; and Council discussed the process and status of Convention minutes.

Unfinished Business & General Orders:

Executive Council Assessment Discussion

Mr. Gomulinski presented an overview of the assessment reports prepared by BoardSource. Secretary M. Peterson presented his summary of the lowest score items from the report. The Council assigned appropriate action items based on the report.

Convention Review:

- Schedule
- Agenda
- Business Summary
- Executive Council Roles & Expectations: The Council discussed assigned roles and responsibilities and identified potential back-up presenters
- Mr. Gomulinski discussed other opportunities Councillors may need to fill

ALUMNI NOTES

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

CALIFORNIA UPSILON '15

Rachel K. Alexander P.E.

Rachel, current ΤΒΠ President, started a new position in December 2022 as an associate engineer for the Sacramento Area Sewer District. Previously, she was an assistant engineer II for the Sacramento County Department of Airports. She has served on the ΤΒΠ Executive Council since 2019.

DISTRICT OF COLUMBIA BETA '93

Tony J. Delgado P.E.

Tony was named business unit leader for Merrick and Company's Energy, Manufacturing, and Bioprocessing (EMB) unit, in April. EMB has a staff of 150+ professionals providing full engineering and construction services. He has a B.S. degree in mechanical eng'g from The Catholic University of America.

FLORIDA GAMMA '16

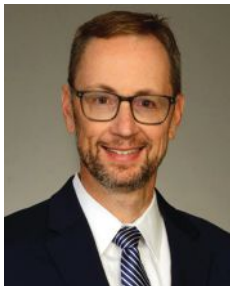
Bryan J. Hare Ph.D.

Bryan was selected as a 2022 recipient of the Spark Award, which is given by the Energy, Policy, and Innovation Center and the Strategic Energy Institute at Georgia Tech. He completed his Ph.D. in chemical engineering focused on the conversion of cellulosic biomass derivates into renewable hydrogen.

FLORIDA DELTA '97

Janine M. Alexander P.E.

Janine has joined the Ductile Iron Pipe Research Association (DIPRA) as a senior regional engineer for the Southeastern States. She has 26+ years experience and has been involved in the design of more than 180 miles of pipelines. Janine previously worked at Tetra Tech and has an environmental eng'g B.S. degree.



INDIANA ALPHA '94

Robert H. Eichenberger JD

Robert recently joined Dinsmore & Shohl LLP as a partner. He is the former chair of Middleton Reutlinger's intellectual property practice group, received his B.S. degree in civil engineering from Purdue University, and was named the 2019 "Louisville Lawyer of the Year" for litigation and intellectual property.

INDIANA ALPHA '20

Madeleine L. Henderson

Madeleine received a Fulbright Award to the University of Exeter (UK) to research "Circular Economy in Medical Devices." She will study sustainable systems change to augment her engineering skills and plans to work with the local NHS hospital to study the environmental and patient care impacts of reusable medical devices.

MASSACHUSETTS BETA '22

Karenna J. Groff

Karenna, an All-America soccer player at MIT, was named the 2022 NCAA Woman of the Year. A two-year captain and biological eng'g major, she led her team to three conference championships and four NCAA tournaments. Groff also received the inaugural NEWMAC Student-Athlete of the Year Award and is pursuing a master's.

MICHIGAN GAMMA '08

Farhan S. Huq M.D.

Farhan has joined Dermatology Partners Lancaster (PA), where he will provide a full range of dermatological care. He earned a B.S. in biomedical engineering, and a master's degree in clinical research at the University of Michigan and completed his medical degree at UofM Medical School.

NEW YORK OMICRON '85

Edward R. Beadle Ph.D.

Edward was named a Principal Fellow at L3 Harris Corporation, a prestigious honor given to less than .01 percent of the company. The honor recognizes him for contributions in detection and estimation for EW, Radar, and SIGINT signal processing. He earned B.S. and Ph.D. degrees from Stony Brook Univ.

OHIO BETA '32

Ezra A. Blount P.E.

Ezra was inducted posthumously into the *Products Finishing's* Hall of Fame in 2023. An editor and world-wide metal finishing and electroplating lecturer and author, Ezra served as secretary of the Metal Finishing Suppliers Association for 26 years and past president of the American Electroplaters Society. He passed in 2010.

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 headshot, name, address, chapter/class year, and email address or phone number. We cannot accept graduation announcements. Thank you!

VIRGINIA BETA '99

Alejandro Rivera P.E.

Alejandro has worked at NASA Goddard Space Flight Center since 2000 and has supported the James Webb Space Telescope (JWST) mission for nine years as a deployables engineer.

In December 2022, he received the Robert H. Goddard Award for exceptional engineering, and in May 2023, Alejandro was awarded NASA's Exceptional Engineering Achievement Medal in recognition of his contributions to the success of the JWST mission. These awards are the highest engineering honors that NASA Goddard Space Flight Center and NASA bestow.

Alejandro Rivera with his NASA Robert H. Goddard Award for exceptional engineering.

In 2011, the JWST program was plagued by problems, including a considerable budget overrun and schedule delay, and the United States Congress nearly cancelled the program altogether. Due to their complexity, the deployable structures and the release mechanisms were identified as one of the primary problems and threats to JWST's schedule, budget, and eventual success.

Out of the 178 release mechanisms, the four that attach the optical portion of the telescope to the spacecraft were the most important and challenging because they support tremendous loads during launch. In 2013, this was considered the top priority among the problems within the JWST project. Because they repeatedly broke during testing, Alejandro was asked to look at this problem.

Alejandro created an analytical model of the mechanism that identified the root cause of the problem, as well as the critical design variables that could help solve the issues with these four devices. After a two-year testing program, and working with a great team, the problem was finally solved. The analytical model he created was also used to verify that the design of the other 174 devices was adequate. These were all part of the 300+ single points of failure, meaning the mission would be over if any failed.

He then began working on the dynamic analysis of the OTE deployables to help ensure they would deploy properly in space. Next, he performed for NASA the dynamic analysis of the separation from the Ariane 5 rocket, part of the insertion of JWST into a direct transfer orbit towards the Earth-Sun Lagrangian Point L2, approximately 30 minutes after lift-off.

Two years of ground testing of the deployable structures followed, where he helped correct more problems. After the launch, two weeks were spent supporting the deployments at the Mission Operations Center. Lastly, Alejandro spent six months of commissioning to work on solving three anomalies, one critical. This required long hours analyzing telemetry and running simulations to deliver information that the propulsion and altitude control system teams needed.

Alejandro considers the opportunity to work and contribute to both the success of one of NASA's most complex missions ever and to the advancement of our understanding of the universe, to be the honor of a lifetime.

PENNSYLVANIA BETA '62

Dennis "Jack" Royer Ph.D.

Jack was selected by the Keystone Central Foundation to be a member of the 2023 Hall of Fame class. His professional career, during which he received 12 patents, includes working at Eastman Kodak, ConocoPhillips, and Dupont. He has B.S. and Ph.D. degrees from Penn State and an M.S. from Carnegie Mellon University.

PENNSYLVANIA BETA '82

Dennis L. Youchison Ph.D.

Dennis is recipient of the 2022 Fusion Technology Award from the Nuclear and Plasma Science Society of IEEE. The award cited his pioneering contributions to the development of components in reactors facing the plasma where nuclear fusion occurs, and his key role in the nurturing and early implementation of public-private partnerships in the U.S. fusion energy program for the DOE.

TBP T-SHIRT DESIGN CONTEST

Get creative, Tau Bates!

Why not take the opportunity to design your very own shirt? We're excited to see your innovative ideas and designs for the Association's new t-shirts.

The winner of the contest will not only get bragging rights but also a ***$500*** prize!

Designs could include one or more of the following:

- The words "Tau Beta Pi"
- The Greek letters ΤΒΠ
- The Bent symbol or the official logos (see below)
- The words "Engineering Honor Society"

If designing a shirt, both sides may be printed using one or two colors. Limit hoodies to front side only and two colors. No design should cause embarrassment to Tau Beta Pi.

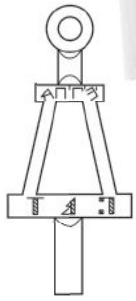
Send submissions in JPEG and questions to *tbp.media@tbp.org*. The deadline is July 31, 2023.

Tau Beta Pi
The Engineering Honor Society

Horizontal Logo

Tau Beta Pi
The Engineering Honor Society

Vertical Logo



Classic Bent

We need *YOU*, to write for *The Bent*

The Editors of *The Bent* are frequently searching for well-written, general interest feature articles for the magazine. Many of you have the appropriate experience, are qualified, and capable of preparing such a feature.

Manuscripts can be 1,000-3,000 words, and should be double-spaced and submitted as a text or MS Word document. Publishing cannot be guaranteed.

Email your proposal to ***tbp.media@tbp.org***.

THE BENEFITS OF MEMBERSHIP

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

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

LINKEDIN: Join 34,550 members in our official group for professional networking and career discussions (search: Tau Beta Pi Engineering Honor Society).

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

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

PPI: 20 percent discount on professional licensing exam review materials (FE/EIT, PE, and more).

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

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