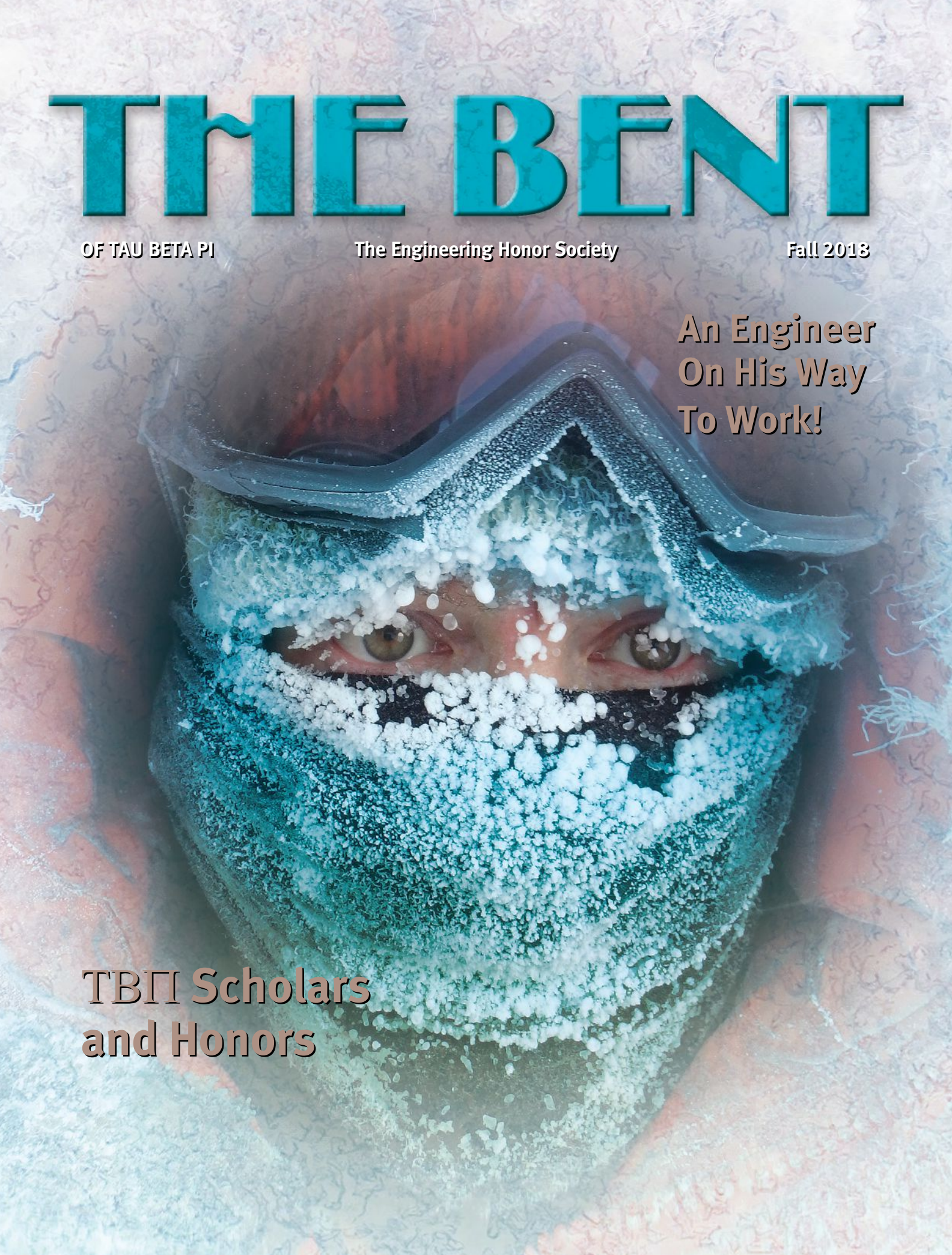
THE BENT

OF TAU BETA PI The Engineering Honor Society Fall 2018



An Engineer On His Way To Work!

ΤΒΠ Scholars and Honors

CHAPTERS

ALUMNI CHAPTERS (78)

• *denotes active chapter*

District 1
- *Central Connecticut, Hartford*
- *Greater Boston Area, MA*

District 2
- Buffalo, NY
- *Central Jersey, NJ*
- Long Island Suburban, NY
- Newark, NJ
- *New York City, NY*
- *New York Capital District, NY*
- *Rochester, NY*
- Southern Tier, Binghamton, NY

District 3
- Lehigh Valley, Bethlehem, PA
- Philadelphia, PA
- *Pittsburgh, PA*
- Wilmington, DE

District 4
- Baltimore, MD
- 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 Florida, Orlando*
- Daytona Beach, FL
- Gainesville, FL
- Miami, FL
- Midlands, Columbia, SC
- *Palm Beach/Broward, FL*
- Piedmont, Clemson, SC
- Puerto Rico
- *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 Michigan, Lansing
- Cincinnati, OH
- Columbus, OH
- *Dayton, OH*
- Flint, MI
- *Ohio's North Coast, Cleveland*
- *Southeastern Michigan, Detroit*
- *West Michigan, Grand Rapids*

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

District 9
- *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 Valley, CA*
- *San Francisco Bay Area, CA*
- San Francisco Peninsula, Palo Alto, CA

District 16
- *Los Angeles, CA*
- *Orange County, CA*
- *Greater San Diego, CA*
- Southern California

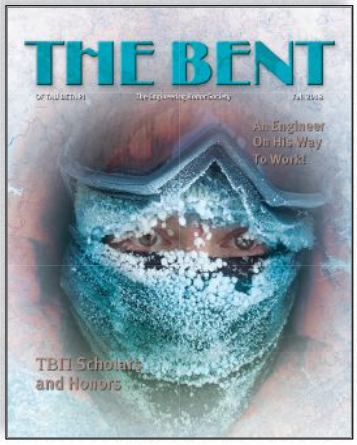
COLLEGIATE CHAPTERS (254)

Chap.	*Dist.*	*Institution*
AL A	6	Auburn Univ.
AL B	6	Univ. of Alabama
AL Γ	6	Univ. of Ala. at Birmingham
AL Δ	6	Univ. of Ala. in Huntsville
AL E	6	Univ. of South Alabama
AK A	14	Univ. of Alaska Fairbanks
AZ A	13	Univ. of Arizona
AZ B	13	Arizona State Univ.
AZ Γ	13	Northern Arizona Univ.
AZ Δ	13	Embry-Riddle Aero. Univ., Prescott
AR A	9	Univ. of Arkansas
CA A	15	Univ. of California, Berkeley
CA B	16	California Inst. of Technology
CA Γ	15	Stanford Univ.
CA Δ	16	Univ. of Southern California
CA E	16	Univ. of California, Los Angeles
CA Z	15	Santa Clara Univ.
CA H	15	San Jose State Univ.
CA Θ	16	California State Univ., Long Beach
CA I	16	California State Univ., Los Angeles
CA K	16	California State Univ., Northridge
CA Λ	15	Univ. of California, Davis
CA M	15	Calif. Poly. St. Univ., San Luis Obispo
CA N	16	California State Poly. Univ., Pomona
CA Ξ	16	San Diego State Univ.
CA O	16	Loyola Marymount Univ.
CA Π	16	Northrop Univ. (inactive)
CA P	15	California State Univ., Fresno
CA Σ	16	Univ. of California, Santa Barbara
CA T	16	Univ. of California, Irvine
CA Y	15	California State Univ., Sacramento
CA Φ	15	Univ. of the Pacific
CA X	16	California State Univ., Fullerton
CA Ψ	16	Univ. of California, San Diego
CA Ω	16	Harvey Mudd College
CA AA	15	California State Univ., Chico
CA AB	16	Univ. of California, Riverside
CA AΓ	15	San Francisco State Univ.
CA AΔ	15	Univ. of California, Santa Cruz
CA AE	16	Univ. of San Diego
CO A	12	Colorado School of Mines
CO B	12	Univ. of Colorado at Boulder
CO Γ	12	Univ. of Denver (inactive)
CO Δ	12	Colorado State Univ.
CO E	12	Univ. of Colorado at Denver
CO Z	12	United States Air Force Academy
CT A	1	Yale Univ.
CT B	1	Univ. of Connecticut
CT Γ	1	Univ. of Hartford
DE A	3	Univ. of Delaware
DC A	4	Howard Univ.
DC B	4	Catholic Univ. of America
DC Γ	4	George Washington Univ.
FL A	5	Univ. of Florida
FL B	5	Univ. of Miami
FL Γ	5	Univ. of South Florida
FL Δ	5	Univ. of Central Florida
FL E	5	Florida Atlantic Univ.
FL Z	5	Florida Inst. of Technology
FL H	5	Florida A&M Univ.-Florida State Univ.
FL Θ	5	Florida International Univ.
FL I	5	Embry-Riddle Aeronautical Univ.
GA A	5	Georgia Inst. of Technology
GA B	5	Mercer Univ.
ID A	14	Univ. of Idaho
ID B	12	Idaho State Univ.
ID Γ	12	Boise State Univ.
ID Δ	12	Brigham Young University-Idaho
IL A	8	Univ. of Illinois at Urbana-Champaign
IL B	8	Illinois Inst. of Technology
IL Γ	8	Northwestern Univ.
IL Δ	8	Bradley Univ.
IL E	8	Southern Illinois Univ. at Carbondale
IL Z	8	Univ. of Illinois at Chicago
IN A	8	Purdue Univ.
IN B	8	Rose-Hulman Inst. of Technology
IN Γ	8	Univ. of Notre Dame
IN Δ	8	Valparaiso Univ.
IN E	8	Trine Univ.
IN Z	8	Indiana Univ.-Purdue Univ. Indianapolis
IA A	11	Iowa State Univ.
IA B	11	Univ. of Iowa
KS A	9	Univ. of Kansas
KS B	9	Wichita State Univ.
KS Γ	9	Kansas State Univ.
KY A	6	Univ. of Kentucky
KY B	6	Univ. of Louisville
KY Γ	6	Western Kentucky Univ.
LA A	10	Louisiana State Univ.
LA B	10	Tulane Univ.
LA Γ	10	Louisiana Tech Univ.
LA Δ	10	Univ. of Louisiana at Lafayette
LA E	10	Univ. of New Orleans
ME A	1	Univ. of Maine
MD A	4	Johns Hopkins Univ.
MD B	4	Univ. of Maryland
MD Γ	4	United States Naval Academy
MD Δ	4	Univ. of Maryland Baltimore County
MD E	4	Morgan State Univ.
MA A	1	Worcester Polytechnic Inst.
MA B	1	Massachusetts Inst. of Technology
MA Γ	1	Harvard Univ. (inactive)
MA Δ	1	Tufts Univ
MA E	1	Northeastern Univ.
MA Z	1	Univ. of Massachusetts at Amherst
MA H	1	Boston Univ.
MA Θ	1	Univ. of Massachusetts Lowell
MA I	1	Western New England Univ.
MI A	7	Michigan State Univ.
MI B	11	Michigan Tech. Univ.
MI Γ	7	Univ. of Michigan
MI Δ	7	Univ. of Detroit Mercy
MI E	7	Wayne State Univ.
MI Z	7	Kettering Univ.
MI H	7	Lawrence Technological Univ.
MI Θ	7	Oakland Univ.
MI I	7	Univ. of Michigan-Dearborn
MI K	7	Western Michigan Univ.
MI Λ	7	Grand Valley State Univ.
MN A	11	Univ. of Minnesota-Twin Cities
MN B	11	Univ. of Minnesota, Duluth
MS A	6	Mississippi State Univ.
MS B	6	Univ. of Mississippi
MO A	9	Univ. of Missouri-Columbia
MO B	9	Missouri Univ. of Science & Technology
MO Γ	9	Washington Univ.
MO Δ	9	Univ. of Missouri-Kansas City
MO E	9	Saint Louis University
MT A	12	Montana State Univ.
MT B	12	Montana Tech of the Univ. of Montana
NE A	9	Univ. of Nebraska-Lincoln
NV A	15	Univ. of Nevada, Reno
NV B	16	Univ. of Nevada, Las Vegas
NH A	1	Univ. of New Hampshire
NH B	1	Dartmouth College
NJ A	2	Stevens Inst. of Technology
NJ B	2	Rutgers Univ.
NJ Γ	2	New Jersey Inst. of Technology
NJ Δ	2	Princeton Univ.
NJ E	2	Rowan Univ.
NJ Z	2	The College of New Jersey
NM A	13	New Mexico State Univ.
NM B	13	Univ. of New Mexico
NM Γ	13	New Mexico Inst. of Mining & Tech.
NY A	2	Columbia Univ.
NY B	2	Syracuse Univ.
NY Γ	2	Rensselaer Polytechnic Inst.
NY Δ	2	Cornell Univ.
NY E	2	New York Univ. (inactive)
NY Z	2	Polytechnic Inst. of Brooklyn (inactive)
NY H	2	City College of CUNY
NY Θ	2	Clarkson Univ.
NY I	2	Cooper Union School of Engineering
NY K	2	Univ. of Rochester
NY Λ	2	Pratt Inst. (inactive)
NY M	2	Union College
NY N	2	SUNY at Buffalo
NY Ξ	2	Manhattan College
NY O	2	SUNY at Stony Brook
NY Π	2	Rochester Inst. of Technology
NY P	2	Polytechnic Institute of New York Univ.
NY Σ	2	Alfred Univ.
NY T	2	Binghamton University
NY Y	2	United States Military Academy
NC A	4	North Carolina State Univ.
NC B	4	Univ. of N.C. at Chapel Hill (inactive)
NC Γ	4	Duke Univ.
NC Δ	4	Univ. of North Carolina at Charlotte
NC E	4	North Carolina A&T State Univ.
NC Z	4	East Carolina University
ND A	11	North Dakota State Univ.
ND B	11	Univ. of North Dakota
OH A	7	Case Western Reserve Univ.
OH B	7	Univ. of Cincinnati
OH Γ	7	Ohio State Univ.
OH Δ	7	Ohio Univ.
OH E	7	Cleveland State Univ.
OH Z	7	Univ. of Toledo
OH H	7	Air Force Inst. of Technology
OH Θ	7	Univ. of Dayton
OH I	7	Ohio Northern Univ.
OH K	7	Univ. of Akron
OH Λ	7	Youngstown State Univ.
OH M	7	Wright State Univ.
OH N	7	Cedarville Univ.
OH Ξ	7	Miami Univ.
OK A	9	Univ. of Oklahoma
OK B	9	Univ. of Tulsa
OK Γ	9	Oklahoma State Univ.
OR A	14	Oregon State Univ.
OR B	14	Portland State Univ.
OR Γ	14	Univ. of Portland
OR Δ	14	Oregon Institute of Technology
PA A	3	Lehigh Univ.
PA B	3	Pennsylvania State Univ.
PA Γ	3	Carnegie Mellon Univ.
PA Δ	3	Univ. of Pennsylvania
PA E	3	Lafayette College
PA Z	3	Drexel Univ.
PA H	3	Bucknell Univ.
PA Θ	3	Villanova Univ.
PA I	3	Widener Univ.
PA K	3	Swarthmore College
PA Λ	3	Univ. of Pittsburgh
PA M	3	Penn State Erie, The Behrend College
PR A	5	Univ. of Puerto Rico
RI A	1	Brown Univ.
RI B	1	Univ. of Rhode Island
SC A	5	Clemson Univ.
SC B	5	Univ. of South Carolina
SC Γ	5	The Citadel
SD A	12	South Dakota School of Mines & Tech.
SD B	11	South Dakota State Univ.
TN A	6	Univ. of Tennessee
TN B	6	Vanderbilt Univ.
TN Γ	6	Tennessee Tech. Univ.
TN Δ	6	Christian Brothers Univ.
TN E	6	Univ. of Memphis
TN Z	6	Univ. of Tennessee at Chattanooga
TX A	10	Univ. of Texas at Austin
TX B	13	Texas Tech Univ.
TX Γ	10	Rice Univ.
TX Δ	10	Texas A & M Univ.
TX E	10	Univ. of Houston
TX Z	10	Lamar Univ.
TX H	10	Univ. of Texas at Arlington
TX Θ	13	Univ. of Texas at El Paso
TX I	10	Southern Methodist Univ.
TX K	10	Prairie View A & M Univ.
TX Λ	10	Texas A & M Univ.-Kingsville
TX M	10	Univ. of Texas at San Antonio
TX N	10	Univ. of Texas Rio Grande Valley
UT A	12	Univ. of Utah
UT B	12	Brigham Young Univ.
UT Γ	12	Utah State Univ.
VT A	1	Univ. of Vermont
VT B	1	Norwich Univ.
VA A	4	Univ. of Virginia
VA B	4	Virginia Polytechnic Inst. & State Univ.
VA Γ	4	Old Dominion Univ.
VA Δ	4	Virginia Military Inst.
VA E	4	Virginia Commonwealth Univ.
WA A	14	Univ. of Washington
WA B	14	Washington State Univ.
WA Γ	14	Seattle Univ.
WA Δ	14	Gonzaga Univ.
WV A	4	West Virginia Univ.
WV B	4	West Virginia Univ. Inst. of Technology
WI A	8	Univ. of Wisconsin-Madison
WI B	8	Marquette Univ.
WI Γ	8	Univ. of Wisconsin-Milwaukee
WI Δ	8	Milwaukee School of Engineering
WI E	8	Univ. of Wisconsin-Platteville
WY A	12	Univ. of Wyoming

the Bent of Tau Beta Pi
The Engineering Honor Society

Fall 2018
Vol. CIX / No. 4

Awardees



ON THE COVER: Tau Bate Rob Streeter reports on life and work at the South Pole.

Features

Reports

Departments

founded at Lehigh University, South Bethlehem, Pennsylvania, June 15, 1885, by Edward H. Williams Jr., A.B., A.C., E.M., Sc.D., LL.D. (1849-1933). Key and name registered in U.S. Patent and Trademark Office. Member, American Society for Engineering Education and (co-founder) Association of College Honor Societies. Affiliate, American Association for the Advancement of Science.

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COUNCIL'S CORNER

The Tau Beta Pi Association was founded at Lehigh University in 1885 by Edward Higginson Williams Jr. to mark in a fitting manner those who have conferred honor upon their Alma Mater by distinguished scholarship and exemplary character as students in engineering, or by their attainments as alumni in the field of engineering, and to foster a spirit of liberal culture in engineering colleges. —Preamble to the Constitution

Civility, Calm, and our Organization

How fast time flies! It has been four years serving on the Executive Council and I have never been more optimistic about Tau Beta Pi as an organization. With a group as large as ours, and the wide spectrum of opinions that Tau Bates have been known to have, in retrospect, it is nothing short of amazing how our bonds of academic, professional, and personal successes have continued to portray our organization in a great light. Although Tau Beta Pi has long been confused with being a social fraternity for those not in the know, the dedication of our volunteers, students, and alumni towards raising the image and awareness of our amazing Association is not going unnoticed. It is within this context that I write this Council's Corner.

Let's take a moment to pause and reflect on our colleagues and friends we have made through our involvement with Tau Beta Pi. I'm sure each of us is well aware of the current divisive climate we are consistently reminded of on a daily basis. However, it's worth noting that although we all have our differing political beliefs, faiths, engineering backgrounds (i.e. mechanical vs electrical engineering), my experience has led me to believe that there is something special about our members. Despite our vast differences, we all share a common drive and understanding of each other. Some of my best friends in this organization have a completely different ideological belief system than I, but we have always maintained a level of mutual respect and appreciation.

As our student members embark on another fall semester (or trimester for those fancy schools), working stiffs send our kids off to school/college, or those of us start our journey into retirement, I want to emphasize the importance of respect. We hold ourselves in high esteem as the premier Engineering Honor Society. It's more than just academic and professional achievement—the character of our members sets us apart! People will differ in opinions, people may let you down, but in the end, all we can control is how we treat others and how we carry ourselves. As we try to raise the image of the organization moving forward, let's remind ourselves that there will always be detractors, naysayers, and critics. It's how we face adversity and how we show respect for others that will speak volumes.

Now, the things we can agree upon! Our great group of candidates, current students, alumni, and volunteers have worked hard to be called Tau Bates! Our drive to chase our interests and succeed where many don't is a unifying thread amongst all of our members, regardless of where we come from, who we do or don't pray to, and more importantly how our strength of character will stand as our witness to all we encounter in our lives. I want you all to remember this as we look back on those who will follow us. Remind yourselves of the great friends, colleagues, and opportunities this organization has provided to us.

I would like you all to consider these things as you progress throughout this year. Taking into account our chapters and programs, such as the Engineering Futures sessions, District Conferences, Convention activities, MindSET Programs, and all the others that benefit our students, I ask that each of you leave something for those who have yet to follow along in our footsteps and take this organization to new heights. I would also ask that all of our volunteers (who already give so graciously of their time) consider donating something to the Association. Tau Beta Pi means so much to us that we need to remember that time is one thing, but a financial contribution through our Alumni Giving Program (AGP) would allow us to continue to grow and fine tune our programs to have greater impact! This non-profit organization has provided financial assistance in the forms of Scholarships and Fellowships that continues to pay huge dividends on these students' careers and contributions to society that I have no doubt they will make. But many other experiences, workshops, and training programs operate completely outside of any endowed funding. That's why our AGP is so important! It is yearly gifts from alumni that allow this organization to provide these services and opportunities. Please consider this as my formal appeal for 2018-19!

And with that, I look forward to another year serving on the Executive Council and continuing to see this organization grow. The tireless efforts by our Headquarters staff, volunteers, and student/alumni chapters is driving this! I wish you all success for this upcoming academic year and look forward to meeting you at this year's Convention in Denver, Colorado!

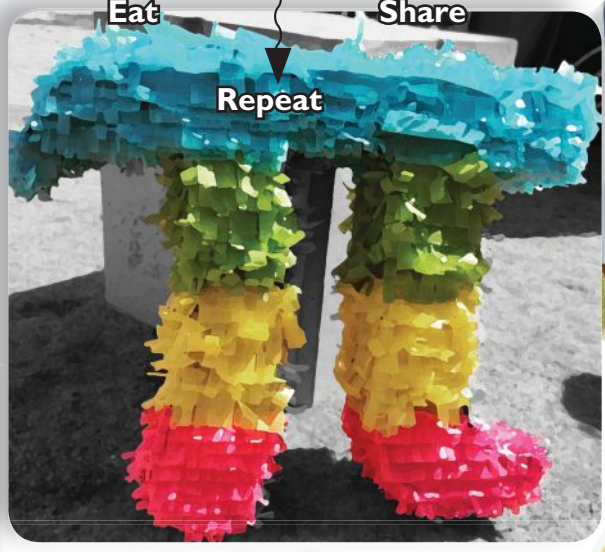
George J. Morales, Ph.D., *Florida Epsilon '06, Treasurer*

Update Your *Bent* Subscription and Enjoy!

With $95 subs get choice of print, electronic, or both.

Join in the FUN!
Thursday, March 14

Plan → Promote → Gather
Eat
Share
Repeat



www.tbp.org/PiDay

Celebrate Tau Beta Pi Day!
3.14.19

EDITORIAL

Seeing and Listening For Those Who Cannot!

The Tau Beta Pi initiation ritual, commonly referred to as the Ritual, has a long history. The original version was written by our founder, Dr. Edward H. Williams Jr., Sc.D. In 1906, he modified the Ritual by adding a portion on the Association's history.

Since its founding, every member has participated in either our Ritual or prior to the merger with Sigma Tau on January 1, 1974, their equivalent. The earliest printed guide we have is from 1906. Changes have been made to modernize the language, and include historical details such as the merger with Sigma Tau and acceptance of women into ΤΒΠ.

More recent changes have continued making language closer to the way we speak today, the addition of the public creed *Integrity and Excellence in Engineering*, and interesting details from the past. Other changes, such as noting the edition on each page and including a list of which pages are from an edition different than the last full printing, help us to only distribute updated pages.

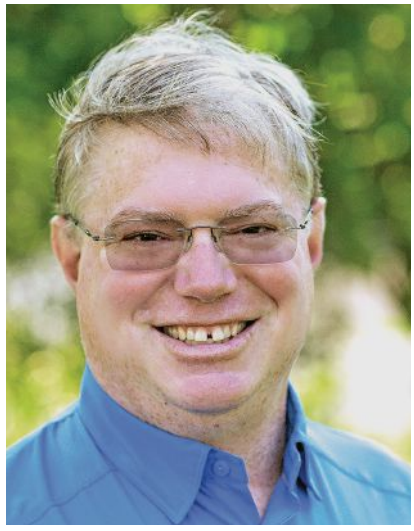


Photo: Tera Girardin

As Director of Rituals, my duties, per the Constitution, are to "manage the Ritual Program and have custody of and cognizance over the form, phraseology, and physical make-up of the rituals, receive and digest suggestions for changes, and, in general, be responsible for all matters in connection with the rituals and the related ceremonies, subject to approval by the Convention."

Avoid Opinions

All members have the right to suggest changes to the Ritual. When I receive one, I work with the member to make sure I understand the idea behind it and prepare it for consideration at the next Convention. On presenting the proposal, I try to remain impartial as I am representing the member. I answer committee member questions with facts and avoid expressing my opinion on the matter.

The 2018 Convention will be the 31st I have attended, either as a delegate or national official. During these gatherings, I have seen delegates who are deaf, have low vision, total blindness, or mobility issues including being in wheelchairs. When Dr. Williams founded ΤΒΠ in 1885, it would have been practically impossible for a blind or deaf person to study engineering, let alone become a member. As Director of Rituals, I have been asked to provide special Ritual scripts so that a deaf initiate could follow along but until 2017 had not been asked about other accommodations.

In 2017, a member requested that we update the Ritual so that chapters know what to do when faced with initiates or team members with disabilities. This was a case where I felt remaining impartial would be a disservice. I explained to the Rituals Committee that I agreed the format needed to be updated to include those with disabilities. We had a long discussion and decided this could be handled via changes to the instructions and Association policy.

The 2017 Convention directed me to modify the instructions to accommodate initiates with mobility issues, low vision, inability to verbally accept the oath of membership, or sign the Chapter Roll. These updates will be reviewed by the 2018 Rituals Committee prior to final adoption. Updated instructions will be provided to chapters after Convention.

We are in the process of producing Braille materials to be loaned to chapters as needed. Information for requesting materials will be circulated when available. Due to the costs involved and the frequency of changes to the Ritual, ΤΒΠ will produce a Braille version of the script on request.

The 2017 Convention also directed the Executive Council to maintain a list of members who are able to interpret the Ritual in American Sign Language and to provide resources necessary for these members to attend initiation ceremonies when requested. We are in the process of finding members willing to travel to initiations and provide ASL interpretation. We will reimburse costs. A large number of requests is not expected, but we need to be prepared. If you would be willing to help by interpreting the Ritual, please email tbp@tbp.org. Include your chapter and class, along with contact information.

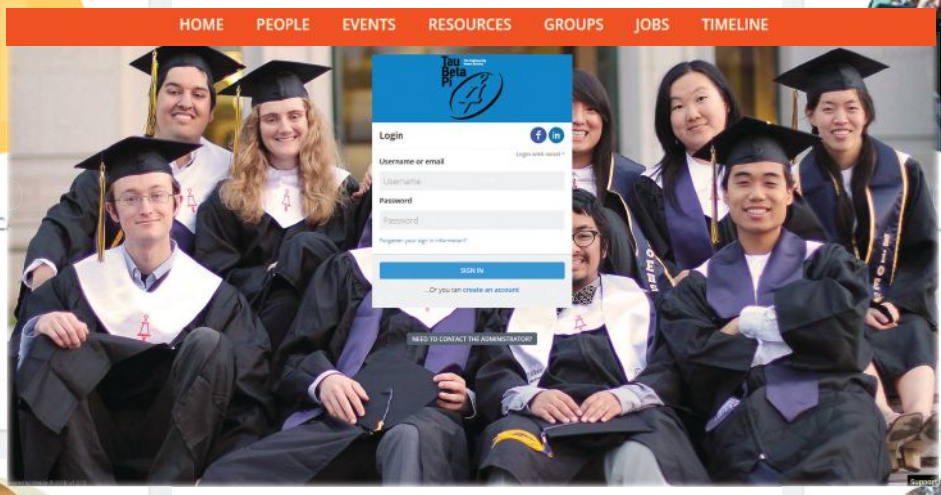
I look forward to hearing from Tau Beta Pi members who can help with this endeavor to provide an improved initiation experience for individuals who are hard of hearing. Thank you for considering to help.

—Edward J. D'Avignon, *New York Beta '88, Director of Rituals*

Put a Name to a Face:

Mentoring & Networking Opportunities for

Tau Bates



Tau Beta Pi has a new online community aimed at engaging members (alumni and students) and bringing them together by interests, skills, and location.

The new platform, by VineUp, is available for use on desktop and mobile devices (Apple and Android app). Features include registration integration with Facebook & LinkedIn, robust mentoring capabilities, and all-inclusive Association social feeds in one location.

Student members will be provided a link to join after completing catalog cards. Alumni will receive a link with a verified code in the URL.

Contact dylan@tbp.org with questions or issues related to joining the community.

How to Join TauBetaPi4Life Community:

- **Visit *tbp.vineup.com to sign up on desktop.***
- ***Search and download "TauBetaPi" in app store and join this way.***

Berkeley, C

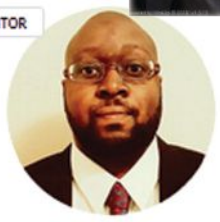
United States

Message

Profile

Joined 2018

MENTOR



Houston, TX, United States

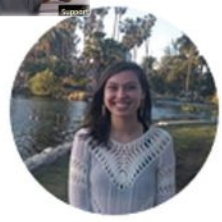
Transmission Planner at CenterPoint Energy

+ Request Mentorship

Message

Profile

Joined 2017



Claremont, CA, United States

Writing Systems Engineering Intern at HP

Message

Profile

Joined 2017

Slidell, LA, USA

Electrical and computer engineer at NASA - National Aeronautics and Space Administration

Message

Profile

Denver, CO, United States

Business Integration Lead at SEAKR Engineering

Boston, MA, USA

Postdoctoral Researcher at Massachusetts Institute of Technology (MIT)

Message

Profile

F.E. Exam Proposal

• I am 76 years old and have been retired for a while. I have been discussing with other engineers why you should take the F.E. exam while still an undergraduate.

I believe that all Tau Bates should take the F.E. exam at the end of their junior year when all the basic knowledge is fresh in their minds. I found having the P.E. license was beneficial in making extra money before and after retirement.

The F.E. is necessary to take the P.E. exam (it was not when I took it). I did take what was then called the E.I.T. exam to get reciprocity with other states.

I am sure that all Tau Beta Pi members are capable of passing the exam and should do so while the knowledge is fresh in their minds.

Mark B. Rothstein, P.E. (Ret.), MA Z '64

Leadership Inspires

(Letter received in response to Secretary J.P. Blackford's Council's Corner in the Summer issue of *The Bent).*

• J.P., It brings me much joy to see your continual involvement in ΤΒΠ and so much so as to have such leadership roles as you do. I still remember connecting with you at my first Convention in Denver back in 2006.

I wanted to say that I was inspired by your recent column in *The Bent,* and wished to take a few minutes to share with you what ΤΒΠ has meant to me because it has been so helpful over the years.

First off, my grad school location is based on ΤΒΠ. At the same Denver Convention, I met Dave Schmidt from Cal Poly—Pomona while waiting for the buses back to dinner from the UC-Boulder campus. We kept in touch and met up a couple times in California the following summer while I was interning at Cisco Systems. Dave was headed to Notre Dame in the fall. The school had never crossed my mind and even when he said it, I was hesitant because of the strong religious aspect. Being a "nice Jewish boy" a religious Christian school didn't feel right, especially ND. But Dave insisted I give it a chance and I ended up connecting with a faculty member there who would be my Ph.D. advisor.

Turns out later I would learn that ND has a VERY VERY prominent role in the field of aerodynamics, but for whatever reason this is something that is often over-shadowed and not well-known.

While at ND, I had the opportunity to serve as a ΤΒΠ Chapter Advisor for six years, and even helped plan the Indianapolis Convention as a result. I made many wonderful connections.

When I graduated, I moved to Israel and the first thing I did was request from HQ the list of Tau Bates living here. I managed to connect with a number of them who've helped me in various ways, but then I've also managed to stumble upon a handful of others as well. The ΤΒΠ connection always throws in a certain brotherhood, and I've managed as a result to help a few "lost" members update their addresses with HQ.

We tried to start an alumni chapter here, but never had enough steam to really get it off the ground. Nevertheless, ΤΒΠ holds a strong place in my heart and I always know that if I meet a fellow Tau Bate, I already know something about their character without needing to know anything more. ΤΒΠ is more than just an honor society. It really is a family and the high standards of integrity and excellence really do show.

Jonathan C. Silver, CT Γ '08

Kudos!

• Thank you! Just read the Summer issue of *The Bent* and wanted to say Wow! Good job!

I liked Sue's (President Sue Holl) and Tricia's (Director of Alumni Affairs Tricia Gomulinski) columns, capturing many of the successes thus far of the Gomulinski era, but also really pushing alumni to get more involved in friendly, compelling ways.

I loved the article on refurbishing the GMT; especially as a former optical engineer who built such telescopes and used Zemax software.

I really connected with the profile on Ray Rothrock.

But most of all, I was impressed with Sherry Jennings-King's continued success with the Chapter Endowment Initiative. I still can't believe this concept has such appeal, but Wow! It apparently does.

Congratulations to all that you are accomplishing!

Rich Andre, C.S.P., NY K '96

Scholarship Thanks

• Thank you so much for choosing me for a ΤΒΠ scholarship. This money will go towards my education as I am working on a degree in biomedical engineering at the University of Wisconsin-Madison.

I will be entering my senior year at the UW and I am beyond excited to continue my education in the college of engineering. I am involved with the Society of Women Engineers which gives me opportunities to share my love of engineering with others and allows me to participate in professional development.

I also give back to the Madison community with my involvement in Badger Volunteers, in which I volunteer once a week during the school year. I am also the current president of the Wisconsin Alpha Chapter.

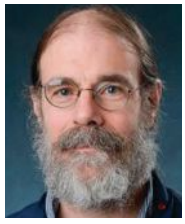
As far as my academics, I want to graduate with a degree in biomedical engineering specializing in bio-mechanics. After graduation, I would like to get into the workforce, developing new medical products. Thank you for helping me further my education with this scholarship.

Desiree Flouro, WI A '19

Kelvin K. Droegemeier, Ph.D., *Oklahoma Alpha '80*, has been nominated by President Donald Trump as director of the Office of Science and Technology Policy. Droegemeier is known for his research in predicting extreme weather events. In the 1990s, he became reputed for his computer simulations of thunderstorm development, drawing on advances in both radar and computer technology. Droegemeier served on the National Science Board for 12 years during the George W. Bush and Obama administrations, including as vice chairman. He was appointed Oklahoma Secretary of Science and Technology in 2017.

Thomas Costabile, *New York Xi '75*, has become executive director of ASME. He was most recently a consultant for Carlan Advisors and also a partner at 3essential LLC, where he advised boards, senior executives, and investors. A mechanical engineer who began his career in nuclear power, Costabile also worked at CBS Records, playing a central role in development of compact disc manufacturing. Other leadership roles include senior vice president, operations for SONY, and president, WEA Manufacturing-Warner Music Group.

David P. Kelly, *Massachusetts Alpha '82*, has been voted in as the 2018-19 president-elect of ABET, the global accreditor of college and university STEM education programs. He is CEO and CTO of InnovaSea, responsible for overall strategy and leading research and development to create advanced open ocean aquaculture farming systems. **Michael R. Lightner,** Ph.D., *Colorado Beta '72*, is scheduled to become 2018-19 ABET past president. He is a professor of electrical, computer, and energy engineering at the University of Colorado, Boulder, where he has been on the faculty since 1981 and served as chair from 2006-14.



José Marcos Flores, *Puerto Rico Alpha '09*, has been chosen by NASA to join the elite corps of flight directors who lead mission control for a variety of new operations at the agency's Johnson Space Center in Houston, TX. He will receive extensive training on flight control and vehicle systems, as well as operational leadership and risk management, before he is ready to sit behind the flight director console in mission control supporting astronauts. Flores interned at multiple NASA centers before joining the agency full time in 2010 as a systems engineer.

David A. Lange, Ph.D., *Indiana Delta '80*, has been elected president of the American Concrete Institute for 2018-19. He is professor of civil and environmental engineering at the University of Illinois at Urbana-Champaign, where he joined the faculty in 1992. A long-time ACI member, Lange has served on the board of direction and is a past Chair of the technical activities committee, the publications committee, and the board outlook 2030 task group.

Anthony L. Mathis, *South Carolina Alpha '86*, is president and chief executive officer of military systems at GE Aviation. In this role, he is responsible for the business' military operations with the U.S. Department of Defense and numerous international military customers for aircraft, helicopter, and marine engines. Mathis joined GE in 1997 after serving in the Air Force, where he focused on flight test and propulsion project engineering.

Amy L. Suhl, *Texas Delta '86*, has been appointed to the Texas State Commission on Judicial Conduct, which regulates the conduct of the judiciary, with the power to recommend retirement, censure, suspension, or removal of a judge from office. Suhl, of Sugar Land, TX, is vice president and CIO of projects and technology with Shell Global Solutions and has 30 years of experience in the field. She is a member of the Texas A&M University department of electrical and computer engineering advisory council.

EXECUTIVE COUNCIL MEETINGS

The Executive Council met in Phoenix, AZ, January 13, 2018

President Holl prepared and electronically distributed a presentation to be delivered by the Council members at the 2018 District Conferences.

Ms. Holl presented the new committee structure and task forces and discussed the assignments to the standing committees, strategic committees, and task forces.

Councillor Blackford moved and the Council approved to charter the Strategic Committees (Development, Program Support, Awards) for a term of three years ending December 31, 2020, or until their work is completed. Christina M. Harrison, *TN A '93*, District 11 Director, presented an overview of the marketing review of the Association including the partnerships with Wharton and the University of Iowa. The primary research by the Iowa group will begin soon.

Councillor Blackford discussed the potential of developing a group of high-profile members designed to promote their involvement in the Association. The Executive Committee will establish a task force assigned to develop this group.

Executive Director Gomulinski provided an update on the proposed HQ Life Insurance plan to the Council and the EC approved. The Association's partnership with ACHS was reviewed and Mr. Gomulinski informed the Council that Tricia Gomulinski, Director of Alumni Affairs, will be the official Tau Beta Pi representative at the 2018 ACHS Conference.

President Holl provided the 2018-19 EC meeting schedule to the Council and discussed the importance of meeting in locations that promote alumni involvement. The 2018 Council's Corner schedule was discussed and the new Councillors were informed of their assignment for the 2019 calendar year.

Councillor Blackford moved and the Council approved, to direct Executive Director Gomulinski to assign HQ staff to collect and review proposals for the Association website by April 15, 2018.

The Executive Council met in Washington, DC, on April 28, 2018

The Council enthusiastically voted a ΤΒΠ Resolution of Appreciation to James. P. Sandman, *TX Z '11*, for his 6 years as an Engineering Futures Facilitator.

Steven T. Stewart Jr., *AL A '14*, was appointed as a District 6 Director to a term ending June 2019; and Tonya J. Whitehead, *MI E '15*, as a District 7 Director to a term ending June 30, 2020.

Janette A. Keiser, *AK A '76*, was appointed as an Engineering Futures Facilitator in Training to a term ending June 30, 2019. Twelve Engineering Futures Facilitators were reappointed to terms ending June 2021 and one to a term ending June 2019.

Two Engineering Futures Adjunct Facilitators and one Emeritus Adjunct Facilitator were reappointed.

A petition to charter the Albuquerque Alumni Chapter was approved. Mortar Board and Pi Kappa Lambda will be recognized on their 100th anniversaries.

Councillor Fable discussed a potential partnership with the National Academy of Engineering, which may provide opportunities to improve the Engineering Futures Program and develop new curricula.

Executive Director Gomulinski reviewed his experience at the CESSE Conference and the Pi Tau Sigma Convention in February. Mr. Gomulinski informed the Council that Brad Gray's contract with Tau Beta Pi has ended after his final visit to Headquarters.

Alex Cross, Assistant Director of Member Services, presented the new online store to the Council and addressed questions regarding the capability of the new system.

Councillor Blackford discussed the recommendations to the Constitution & Bylaws from the 2017 Convention. Vice President Paugh discussed the progress of the Development Committee, focusing on the millennial generation and how to engage them beyond graduation. Councillor King-Monroe discussed the work of the Program Support Committee. The 2017 Convention Survey was reviewed. The Director of Alumni Affairs requested a part-time employee to focus on alumni matters and the Director of Engineering Futures noted that a full-time responsible party would be recommended. President Holl updated the Council on the status of the ratification ballots for the C&B amendments and noted that 93 chapters submitted invalid ballots or did not submit a ballot. The Council voted in the affirmative for the 93 chapters to ratify the amendments to the Constitution and Bylaws. The Council approved the policy which requires the Council to make a final approval of both the 2019 and 2020 Convention sites, with a preference for non-Halloween dates.

Mr. Gomulinski informed the Council of the requested donor restrictions of the proposed Thomas R. Berthold Scholarship Fund; the Council approved and the Fund established.

The Council discussed bids for the Tau Beta Pi website and pending a recommendation from the Website Task Force by June 24, 2018, Headquarters is authorized to contract with a website designer for up to $10,000 to create a recruiting website; the Council approved. The National Science Bowl's program and potential for partnerships with the Association was discussed.

The Executive Council met by Teleconference, July 26, July 28, and July 31, 2018

The Council approved the appointments of the 2018 Convention officials:

Ronald M. Hickling, *CA E '80*, as permanent Conven-

The 2018-19 Executive Council Left to Right: C. Craig Smith, George Morales, J.P. Blackford, George Youssef, Wayne Paugh, Sue Holl, Menna Youssef, Scott Fable, and Stephan King-Monroe.

tion Chair; Joseph P. Blackford, *DC Γ '95*, as Secretary; Jason A. Abellada, *FL A '04*, as Parliamentarian; Elson Y.-H. Liu, *AZ A '01*, as Chair of the Teller's Committee; George K. Miyata, *WA Δ '10*, as Chair of the Credentials Committee; and Christopher J. Creveling, *UT A '13*, as Convention Photographer.

The Council approved the reappointments of 16 District Directors to a term ending June 30, 2019. Resolutions of Appreciation were approved for retiring District 1 Director Brian M. Leslie, *MA A '14*, and District 6 Director Laura M. Martin, *KY A '14*.

Andrea J. Pinkus, *NY Δ '97*, was reappointed as an Engineering Futures Facilitator to a term ending June 30, 2021.

The Council awarded a Resolution of Appreciation to Jacob Willemain, *MA I '18*, for his heroic actions during a situation at the 2017 annual Convention in Dearborn, Michigan.

President Holl noted the progress in preparing a celebration for the 50th anniversary of women's membership in Tau Beta Pi and updated the Council on the developing plans to highlight the 30th anniversary of the Engineering Futures Program.

Councillor Fable updated the Council on the Website Task Force's progress. Around 40 members have participated in preparing a recommendation for Headquarters. Mr. Fable informed the Council that Headquarters is now at the stage to pursue a solicitation.

Councillor Blackford presented recommendations for updates to the Constitution and Bylaws to be addressed by the 2018 Convention and the Council approved to send the charges recommended by the 2017 Convention to the 2018 Convention. Mr. Blackford presented the proposed editorial changes to the Constitution and Bylaws and the Council approved to report the changes to the 2018 Convention.

The Council approved the following: to divide the July 1 nomination deadline from the required number of nominees for the Executive Council and approved the July 1 nomination deadline; to postpone discussion of Graduate Student Eligibility until the August in- person meeting; and send the proposed change of the Petitioning Process to the 2018 Convention.

The Council approved the nominations of Josuan Hilerio-Sanchez, *PR A '07*, Chris C. McComb, *CA P '12*, George K. Miyata, *WA Δ '10*, and Lauren J. Swett, *ME A '04*, to the Council's Awards Committee for a term ending December 31, 2018.

The Council accepted the Alumnus Recognition Selection Committee's recommendations for the 2018 Distinguished Alumnus Award and they are: William L. Collins Jr., *FL Γ '75;* Aprille J. Ericsson, Ph.D., *DC A '86;* James E. Halligan, Ph.D., P.E., *IA A '62;* and Gary D. Hoover, *IA A '61*. The Council accepted the 2018 McDonald Mentor as James C. Hill, Ph.D., *CA Γ '62*.

The Laureate Selection Committee presented four nominees and the Council approved the nominations of Krista L. Stribling, *IN Δ '18*, and Amy C. Kurr, *IA A '18*, as the 2018 Tau Beta Pi Laureates.

The Council approved the preliminary petition from Tau Beta Xi at The University of Texas at Dallas and approved the inspection visit. Councillor M. Youssef was appointed as the installing deputy. The Council approved the charges for the 2018 Convention Committees.

Executive Director Gomulinski presented his overview of the FY19 budget and discussed trends of revenues and expenses over the last 10 years. The Council discussed Supplemental Budget Requests and Executive Director Gomulinski recommended the Council adopt the proposed FY19 budget, amended with the approved Council supplemental requests, and the Council approved the FY19 budget, as amended.

ΤΒΠ Directory

EXECUTIVE COUNCIL

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2018 TBΠ-MCDONALD MENTOR

Established in 2006, the Tau Beta Pi-McDonald Mentor Award celebrates excellence in mentoring and advising among educators and engineers who have consistently supported the personal and professional development of their students and colleagues. It recognizes those who have shown true concern for individuals, supported an environment for developing talents, and earned respect and recognition for their contributions to their field and the greater community.

James C. Hill, Ph.D.

For his outstanding success in mentoring engineering students, **James C. Hill,** Ph.D., *California Gamma '62*, is the 2018 TBΠ-McDonald Mentor. He is Iowa State University Professor Emeritus.

Hill will be honored on October 12, 2018, at the 113th annual Convention in Denver. Tau Beta Pi President Sue Holl, Ph.D., will present $1,000, an engraved medallion, and a pin to Hill. Another $1,000 grant will be presented to the Iowa Alpha Chapter of Tau Beta Pi for nominating him.

Established in 2005 by Marion and Capers W. McDonald, *North Carolina Gamma '74*, and the Association, the McDonald Mentor Award recognizes engineering educators or professionals in industry, government, or service organizations who have shown true concern for the individual, supporting an environment for developing talents, and who have earned respect and recognition for contributions to their field and to the greater community.

Hill has provided leadership and a commitment to assisting engineering students for more than 45 years.

He retired in 2017 from Iowa State University (ISU) where he became a faculty member of the chemical and biological engineering department in 1971.

Hill's service to the Iowa Alpha Chapter began in 1978 as an Advisor and he served for nine years as the chapter's Chief Advisor. Hill has also served as an Association District 11 Director since 1995. In these roles, his knowledge of the processes of the Association has been valued and passed on to other leaders.

Under his guidance, the IA Alpha Chapter has hosted two TBΠ Conventions (1988 & 2013) and received 22 Chapter Excellence Awards, two R.C. Matthews Outstanding Chapter Awards, and eight Outstanding Chapter Honorable Mentions.

Hill has been recognized with his own awards, including the first TBΠ Outstanding Advisor Award (1994) and the American Solar Challenge Lifetime Achievement Award (2016).

He was instrumental in Iowa State University's development of a solar car for the first American solar car competition and when the university's solar car team became an independent student organization, he continued to serve as its advisor and mentor for the next 27 years.

In 1991, Hill's popularity with students led to his initiation into the Cardinal Key Honor Society for exemplifying outstanding leadership, scholarship, character, and service.

On the nomination form for the Cardinal Key membership, it was stated that "The number and quality of Dr. Hill's students who have gone on to occupy positions of leadership in industry and universities testify to his effectiveness as a mentor."

At the academic level, Hill is known not only for his outstanding research ability and superior teaching, but also for his dedication to professional service and his role as a true university citizen.

For his lifelong commitment to mentorship, inspiring students, and unselfish devotion to supporting associates, colleagues, and students, Hill is the 2018 Tau Beta Pi-McDonald Mentor.

Two Laureates have been selected in the 37th year of Tau Beta Pi's annual program to recognize gifted engineering students who have excelled in non-technical areas. Award categories include arts, athletics, diverse achievements, and service. The Laureates join 107 other outstanding Tau Bates who have been cited since the program began in 1982. The Laureates will be honored with other 2018 Association award winners at the 113th annual Convention in Denver. Tau Beta Pi President Sue Holl, Ph.D., will present each with a $2,500 cash award and a commemorative plaque. The Laureate Program was inaugurated to further Tau Beta Pi's second basic purpose as stated in the preamble to the Constitution: "to foster a spirit of liberal culture in engineering colleges." A committee of District Directors considered ten nominees from ten chapters.

Tau Beta Pi The Engineering Honor Society

2018 LAUREATES

Amy C. Kurr

AMY C. KURR, *Iowa Alpha '18*, has been named a 2018 Tau Beta Pi Laureate for her achievements in athletics. She graduated from Iowa State University with a bachelor's degree in materials science and engineering.

Kurr is an international competitor and multiple award winner in the field of power lifting. She is also the founder of Ladies in Fitness Training, an organization that encourages women to engage in sports and exercise. A focal point of this organization is to combat the bullying women may face when they engage in traditionally male-dominated sports.

As the first female member of the ISU weight club, she currently holds four records each in the United Powerlifting Association women's junior 90kg and 90+kg weight classes.

In addition, Kurr conducted research at Ames National Laboratory, Cardiff University in Wales, and Germany's Aachen University.

She was a 2017 ΤΒΠ Scholar, an active member of the Iowa Alpha Chapter, and served as an initiate small group leader. Nominating Amy, the chapter cited her contributions to the field of engineering, athletics, and as a role model defy her age. She's maximized her opportunities for leadership and development and found success in each endeavor.

Krista L. Stribling

KRISTA L. STRIBLING, *Indiana Delta '18*, has been named a 2018 Tau Beta Pi Laureate for her service achievements. She recently graduated from Valparaiso University with a bachelor's degree in civil engineering.

Krista is an international humanitarian with a commitment to service.

Stribling was president of an organization called WAVES, which stands for Working Across Vocations Everywhere through Service. This was a student chapter of Engineers Without Borders that was re-branded to grow into a diverse and interdisciplinary organization.

She has done field work in Haiti, Nicaragua, Uganda, and Ethiopia working on life-changing projects such as water pumps. Stribling has also grown personally through relationships with individuals on these trips.

In addition, Stribling has won multiple scholarships and awards for leadership and service.

As former Indiana Delta Chapter Treasurer, Stribling drafted the 2018-19 budget, has twice been involved with the planning of Engineers' Week, and was recognized as a 2017 ΤΒΠ Scholar. Her contributions to her college, her community, and the world have created a better future for many others beyond herself.

William L. Collins Jr.

In recognition of outstanding lifetime achievements, **William L. Collins Jr.,** *Florida Gamma '75*, is recognized as a 2018 ΤΒΠ Distinguished Alumnus. He is an inventor and dedicated supporter of the Florida Gamma Chapter. Collins has demonstrated a commitment to service to the Association and acumen as an inventor.

After serving in the U.S. Air Force for seven years, he attended the University of South Florida where he completed B.S. and M.S. degrees in electrical engineering.

Collins was integral in the chapter's founding in 1974 and served as its second President.

His leadership led to Florida Gamma receiving the 1975 Outstanding Chapter Award.

Highlights of his professional work include discovering a design error in a Critikon infusion pump, working with Peter Lewin on showing shockwave energy to have lower radiation, and implementing a small electronics assembly operation.

Collins served as a Florida Gamma Chapter Advisor for 2013-17 and remains closely involved at his alma mater.

He has guided multiple officers in their leadership roles and made time to advise each individual chapter member on their academic and professional endeavors.

Collins is also active with the Tampa Bay Alumni Chapter and was responsible for establishing a connection between the alumni and collegiate chapters through which students can network with those employed at local engineering companies.

He has also promoted participation in local K-12 robotics and STEM activities for both alumni and collegiate chapters.

He is being recognized for giving his all to ensure the success of the Association and all its members.

Aprille J. Ericsson, Ph.D.

In recognition of outstanding lifetime achievements, **Aprille J. Ericsson,** Ph.D., *DC Alpha '86*, is recognized as a 2018 ΤΒΠ Distinguished Alumna. She sits on technical academic boards at the National Academies and MIT and spent more than 25 years with NASA.

Ericsson balances her career with activities that demonstrate her passion for outreach and advocacy.

She attended MIT with plans for a career as an astronaut. Her dream of entering the space program was diverted and she chose graduate school. There, she became the first woman to earn a Ph.D. in mechanical engineering from Howard University. During her Ph.D. study, she landed an internship at NASA's Goddard Space Flight Center leading to a full-time position.

Ericsson has held numerous roles, including as new business lead for the NASA GSFC instrument systems and technology division and most recently serving as the capture manager for a proposed astrophysics mid-sized class explorer, called STAR-X.

Formerly, she served as the deputy to the chief technologist for the applied engineering and technology directorate.

As an altitude control systems analyst, she developed practical control methods and analyzed structural dynamics for several space science missions.

She also served as a NASA HQ program executive for earth science and a business executive for space science.

As a motivational speaker and part of NASA's speaker's bureau, Ericsson champions the virtues of STEM courses in schools and is concerned with growing the number of women and minorities in related fields.

Distinguished Alumni are recognized for their demonstration of outstanding adherence to the ideals of Tau Beta Pi (integrity, breadth of interest, adaptability, and unselfish activity) and for fostering a spirit of liberal culture in society. Recipients exemplify excellence in both leadership and character to members of collegiate chapters. This year's ΤΒΠ Distinguished Alumni will be honored on October 13, 2018, at the 113th annual Convention in Denver. Tau Beta Pi President Sue Holl, Ph.D., will present a commemorative plaque and a $2,000 scholarship will be given in the name of each alumnus to a deserving student member.

James E. Halligan, Ph.D., P.E.

In recognition of outstanding lifetime achievements, **James E. Halligan,** Ph.D., P.E., *Iowa Alpha '62*, is recognized as a 2018 ΤΒΠ Distinguished Alumnus. He has devoted his career to serving others, is a two-term Oklahoma State Senator (2008-16), and past president of two universities.

Halligan earned his bachelor's, master's, and Ph.D. degrees in chemical engineering from Iowa State University. Before that, he spent four years in the U.S. Air Force as a Bulgarian interpreter.

After working with Exxon, he joined the faculty at Texas Tech and later became the dean of engineering at the University of Missouri-Rolla. In 1984, Halligan was chosen as president of New Mexico State University.

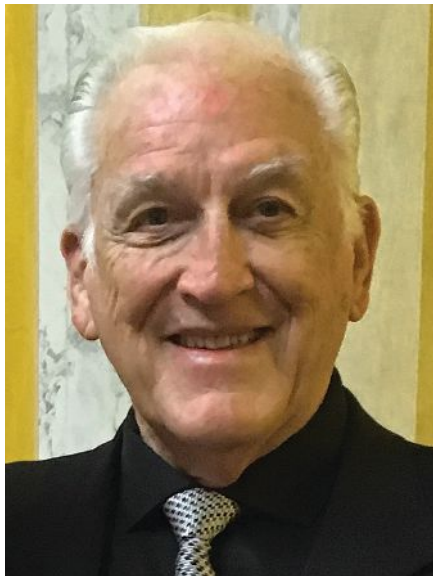
He spent ten years at NMSU before becoming Oklahoma State University's 16th president in 1994.

After retiring as OSU president, he spent time teaching at Prince of Songkhla University in Southern Thailand, completed a Fulbright in Germany where he visited numerous institutions emphasizing the fund-raising responsibilities and techniques of a university leader. He also undertook a brief academic assignment at the University of Plovdiv in Bulgaria.

In 2008, Dr. Halligan became Senator Halligan, being overwhelmingly elected the State Senator from Oklahoma's 21st District. He served as chairman of the subcommittee on appropriations for higher education, public schools, and the career technology system.

In 2015, he released a statement announcing that he would not seek reelection to a third term in office. Halligan's contributions led to a joint nomination from the alumni and collegiate chapters in Oklahoma.

Gary D. Hoover



In recognition of outstanding lifetime achievements, **Gary D. Hoover,** *Iowa Alpha '61*, is recognized as a 2018 ΤΒΠ Distinguished Alumnus. He is a philanthropist and involved with both Iowa State University and Wartburg College boards.

He has made many civic, educational, religious, and philanthropic contributions from the local to the international level. Hoover retired in 1995 as vice president of Tenaska, Inc., which he co-founded to build and operate large-scale power plants.

Hoover and his wife Donna have been active in support of higher education both at Iowa State University (ISU) and Wartburg College in Waverly, IA.

His leadership and commitment in service to Iowa State is a reflection of his lifetime membership in the ISU Alumni Association. Involvement with Wartburg College is based upon family ties and his own experience in attending a faith-based school where he received his master's degree in business administration.

At ISU, Hoover has been on the foundation's Board of Governors since 2004, the Order of the Knoll since 1992, ISU Alumni Association Board of Directors from 1998-2003, and the ISU Alumni Association Leadership Guild since 2009.

At Wartburg, Hoover has served on the Board of Regents since 1998, Commission Wartburg from 1999-2006, Commission on Mission from 2007-10, and the Wartburg Engineering Science National Advisory Board since 2010.

His awards include the 2006 Iowa State University Alumni Medal while his philanthropy provided $1.5 million for the Gary and Donna Hoover Chair in mechanical engineering and $3 million for the Gary and Donna Hoover Hall building.

Baby, It's Cold Outside!

A Tau Bate reports from the bottom of the planet on a winter of life in the long, dark night of Antarctica

By **Robert W. Streeter,** *Wyoming Alpha '11*

The United States Antarctic Program is managed by the National Science Foundation. The author is employed by the Antarctic Support Contract to perform work at Amundsen-Scott South Pole Station. He is shown outside the station during the three-month summer season when temperatures are around -20 to -30F.

THE JOB TODAY IS to go check on a radar that detects auroras. The remote interface from my desk in the B2 Pod of the elevated station indicates things are probably just fine, but it's Thursday, and an on-site check needs to be done. Were it only a couple months ago in December, it would be a nice ski with a light jacket, temperatures in the single-digit negatives Fahrenheit, to traverse the 750 meters to the small elevated outbuilding housing the electronics that power the array. But it's not December. It's April. The sun dipped below the horizon last month and temperatures are well below –70F. The wind-chill mark sits around –100F. At least the wind is blowing across the flag line, so I'll never have to face it directly.

The thought of trying to ski does come to mind, but it's frostbite in under five minutes and skiing leaves your hands exposed. There's also the chance, slim as it may be, of freezing into the bindings. No, the journey across the snow and ice is on foot today.

I applied to the U.S. Antarctic Program three times before I heard back. Figured: why the hell not? Never hurts to throw in an application. Then I got an email asking for a good time to call and talk about a job at the South Pole. The first phone call, the person on the other end politely tried to scare me out of it. Phrases like "it's a 13-month deployment," "you get two two-minute showers a week," or "the internet is slow and only available a few hours a day." Daunting for some, sure, but I was in. No way was I going to give this chance up: I'd actually gotten a call to work at the South Pole!

I'll never know what exactly qualified me, above other certainly top-notch applicants. I started my application with a story about my family caretaking a ranch in winter in the remote Wyoming Rockies. The ranch (an active dude ranch in the summer season) is situated on the edge of the Gros Ventre Wilderness, not far from Jackson Hole. It's 22 miles from where they stop plowing the road in winter, and operates completely off the grid. I went on to discuss my many years working in research labs, during undergraduate work, grad school, and later as a civilian contractor for the U.S. Air Force. I mentioned working for a small communications company in Wyoming, which included maintaining mountaintop sites during harsh winters.

After getting to know some of the other winter-overs this year, I suspect the reasons for my selection were all of the above, and more. Every soul down here this winter is dynamic, motivated, confident, and diverse. Our food service supervisor volunteered for days helping his neighbors during Hurricane Harvey, after he returned home from his time in the army. One of the IceCube (a neutrino detector, occupying about one cubic kilometer, buried 1.5 kilometers under the surface of the ice) operators, who happens to be from Germany, is a women's self-defense instructor and teaches a knitting class at the Pole. A similar story can be said for everyone on-station. Our combined

Amundsen-Scott South Pole Station seen in 2009, when construction on the station was nearly complete. *Photo: Daniel Leussler. Map below by NASA.*

knowledge, skills, and experience make us a team, entrusted with not only surviving, but also conducting and maintaining cutting-edge science at the bottom of the world.

The process of Antarctic deployment is not a trivial one. After the interviews, I visited the Antarctic Support Contract headquarters in Centennial, CO, and proved to the station leadership that I wouldn't absolutely lose it during the eight months of physical isolation from the outside world. Then, I had the extensive physical and psychological tests (including a 500+ question psych test). Lastly, there are the weeks of weather observer, firefighter, and team-building training.

Finally, at the end of October, seven months after that first phone call, I was ready to board a plane at Denver International Airport. Denver is about 12,000 travel miles from

PHOTOS—TOP: An LC-130 Hercules, engines still idling, offloads passengers and cargo on the packed snow skiway at the South Pole. *Photo: Rob Streeter.*
CENTER: Sunset Dinner hails the start of twilight before months of darkness and cold temperatures at the South Pole. *Photo: Adam Jones, 2018 South Pole Telescope winter-over.*
BELOW: A larger berthing room in the A1 Pod of the station. Most winter-overs opt to move into such a room when the station closes at the end of February.

the South Pole. Program participants (at least those not traversing the Americas to reach Palmer Station on the Antarctic Peninsula by boat) take commercial flights from Denver to San Francisco or L.A., to Auckland, New Zealand, and finally to Christchurch. The CDC (Clothing Distribution Center) is within walking distance from Christchurch Airport. We stayed in "Cheech"—Christchurch in our slang—for a couple days. There, we all received our ECW (Extreme Cold Weather clothing), sat through several briefings, mostly on safety and waste disposal on the Ice (local name for Antarctica), and then boarded a C-17 operated by the U.S. Air Force, bound for Phoenix Airfield on the Ross Ice Shelf. We had seen the last green grass we would see for over 12 months.

A C-17 makes the flight to Phoenix both comfortable and fast. Only a few hours after leaving lush, green, fragrant New Zealand, the Ice was visible outside the portholes. About five hours after leaving Cheech, we touched down on a field of endless white. Phoenix is some distance out onto the Ross Ice Shelf. Ross Island, home to Mount Erebus, Mount Terror, two active research stations, and a long history of polar exploration, is visible a few miles distant. It is cold out, but not haltingly so. We are ushered into a transport on huge tires, pulled by a tractor. It's just under an hour drive off the Ice, past New Zealand's Scott Base, and over the hill to the largest station on the subcontinent: McMurdo.

In the beginning, the U.S. Antarctic Program was operated by the U.S. Navy. Even Amundsen-Scott South Pole Station, hundreds of miles from open water, was led by a naval officer. As the program grew, it quickly became apparent that a substantial station, dedicated not only to science and exploration, but also to logistics and support was needed. McMurdo was the solution. The station boasts a population close to 1,000 during the summer season (October to February). Every year, a U.S. Coast Guard icebreaker cuts a channel from the open waters of the Southern Ocean to the ice pier. The cargo vessel that follows brings supplies for McMurdo, Scott, South Pole, and all U.S. field camps scattered across the continent.

There is a catch with flying around Antarctica: there is only solid ground near the coasts. Wheeled aircraft are limited to operations with hard-packed ice or earthen airstrips. In fact, it's standard practice for smaller craft like Baslers and Twin Otters to actually switch from wheels

The aurora australis over Amundsen-Scott Station on June 24, 2009. The photographer used a 3 second exposure to capture this image. *Photo: Patrick Cullis, NSF/U.S. Antarctic Program photo Library*

to skis, depending on their mission. Given this, a C-17 cannot land at the South Pole (but it can conduct airdrops). A specialized plane, the LC-130 Hercules, is the vehicle of choice from McMurdo to Amundsen-Scott. The "Herc," as it's called, is a military transport outfitted with hydraulic skis. When one wants to land on tarmac, the skis are lifted. When a "Herc" wants to land at the South Pole, the several-foot-wide skis descend, allowing the aircraft to glide smoothly across a skiway's groomed surface.

That first step off the LC-130 at Amundsen-Scott South Pole Station, around 1400 local time on November 1, 2017, for me, hit like a punch in the chest. Physio-elevation was around 10,000 ft. above sea level, so my breaths were deep, but the air was 40 degrees (Fahrenheit) below zero (a temperature I would later consider very tolerable). I coughed into my balaclava and hoisted my bag higher on my shoulder. I was home. My berthing, the only space I could really call my own for the next 13 months, was a 6 ft. by 9 ft. room. Packed into the space was a small desk, a dresser, a closet, and a lofted twin bed. My room was on the inside row and had no window, something I was actually thankful for. The 24-hour sunlight during the austral summer would mean I'd need to cover the window to sleep anyway. It was also warmer and quieter on the inside. Some outside rooms have thinner walls, meant to be reconfigured if needed, but all the walls on the inside rows are thicker.

When summer ended in February and that last flight left, I moved into a larger room. Still on the inside, it included a larger desk and more dresser space. Most importantly though, the new room was big enough for my 6 ft. 5 in. frame to move around in. Even though it's only 9 ft. 9 in. by 8 ft., the difference is liberating.

Time seems to move at a different pace. Many of the distractions present in a "normal" workplace are absent. There is no commute, no traffic, no phones, no social media (except when the satellite is accessible from the station, and then only a limited amount). Scheduling is mostly up to me. I have a few things that need to be done at certain times, like weather observations, financial balancing, or experimental data recording, but otherwise my day-to-day is up to me. A job that might take me a week in the States, takes me only a day or two here. It's an empowering feeling.

Time seems to move at a different pace at Pole. Many of the distractions present in a "normal" workplace are absent. There is no commute, no traffic, no phones, no social media.

As I would learn over the first few months, my job, formally "Cusp Research Associate," would involve too many aspects to count. I trained with the summer fuel operators ("fuelies" for short) to marshal aircraft, draw fuel from LC-130s, provide fuel to Twin Otters and Baslers, and help manage the fuel stockpile buried under the icecap. I also leveraged my experience as a volunteer firefighter to lead the station's fire brigade, part of the four-team emergency response system. I also learned how to launch weather balloons and take observations, manage finances for the entire station, and how to properly apply elbow grease in the galley's "dish pit."

Primarily though, I was to maintain a host of scientific experiments dealing mostly with space weather. That is, upper atmospheric phenomenon caused by charged particles from the sun interacting with our planet's atmosphere and magnetic field. Unlike mid-latitudes, Earth's magnetic field lines run nearly vertically here. This literally guides charged particles from space directly toward the surface. Turn a particular knob and I can listen to a representation of atmospheric electrical signals, like lightning and auroras. I can remotely log into a computer to see images of the sky from a camera with a full 180-degree, horizon-to-horizon view. Instruments I tend monitor spectral content from the extremely low frequencies, through high frequencies, then into the visual range. Today though, it was time to check the auroral radar site. And it was cold and dark out.

As I start down the stairs at Destination Zulu (DZ for short), I double-check my pockets. I have my radio,

Dark Sector buildings almost a kilometer from the station. Foreground: the Martin A. Pomerantz Observatory (MAPO) building with the Keck/SPUD telescope array. Distant: the Dark Sector Lab (DSL) housing the South Pole Telescope and (SPT) the BICEP array. *Photo: Rob Streeter.*

my headlamp, a small notebook and pencil (a pen would freeze and be unusable), and a camera. I'll probably need none of these, but I carry them anyway. Better to have it and not need it than have to hike back to the station. As soon as I hit the landing halfway down the stairs, I am pelted by the wind whipping under the station. To prevent drifting against the structure, the Elevated Station is built on 36 columns, holding the 60,000-sq. ft. building a generous full floor above the surface of the ice. It's dark enough out that I'm awkwardly looking down, watching my feet, trying not to trip on the snow-covered steps. Crunch. I'm off the stairs and onto the ice. The actual ground is some 9,000 feet beneath me, but the ice cap is solid enough to walk on easily.

The first hundred feet or so are cumbersome and slow. I have to move carefully when I'm directly under the station to avoid slipping on the wind-polished ice. Under the station, it is actually ice, swept clean by the winds. Away from the station, it's dry snow. The details of the landscape are lost to the dark, but I can tell when I reach the base of the station's drift. There's a path cut into the slope on the grid east side of the station. We use grid directions in Antarctica, since "north" from the South Pole is literally every direction. To make it easy, grid north is the Prime Meridian passing through Greenwich in the U.K. Grid east then is 90-degrees off from that, or roughly the direction of Bangladesh. That's where I'm heading. I blink a few times, my eyes still adjusting to the low light, and head up the stairs cut into the ice and snow.

At the top of the station's drift, offset from the structure by 20 ft. or so and nearly level with the lower level of the station, I head for the Geographic South Pole. There are three poles in Antarctica. The Amundsen-Scott Station is located at the Geographic Pole, or the southern point on the Earth's axis of rotation. The station, and all the outbuildings, drift at a rate of about 33 ft. annually. This is the ice cap shifting toward the coast. The Geo Pole is relocated every January 1 to make up the difference. The other two poles are the Magnetic Pole, now located off the coast of Antarctica, and the Geomagnetic Pole, sitting somewhere between the two near Russia's Vostok Station. I'm headed for the Geo Pole now to meet up with the end of the flag line leading out to the radar.

That's how we navigate around outside in the austral winter: flags, placed in the snow under the light of the sun, spaced 20 or so feet apart. No white light is allowed outside, many experiments are hypersensitive to light, and dim red is a workable alternative to blinding (and electromagnetically noisy) white. I don't really need any light for now, as I can see a flag or two by the bit of starlight and auroral activity making it through the wind-created blowing snow traversing the landscape.

The snow beneath my heavy steps crunches with each step. It's a sound more felt than heard. It's tough to hear anything under all the layers needed to stave off frostbite.

I hesitate a bit near the edge of the flags marking the boundary of the sub-ice facilities, called "arches." These include supply storage, fuel storage, our primary diesel power plant, and the vehicle maintenance facility. The flags are to warn vehicles from driving over the buried structures. I cannot quite see the first flag of the line out to the radar. A quick glance around spurs a moment of trepidation. I almost unzip my parka to pull out my red headlamp (keeping it exposed would drain the battery very quickly at these temperatures), but I decide against it and take a few steps along the flags. Squinting out into the darkness, I can see it, a single flag, flapping in the wind. I know from memory it's red, but it's just a slightly darker black now. That's my line. I head that way, the snow beneath my heavy steps crunches with each step. It's more felt than heard. It's tough to hear anything under all the layers needed to stave off frostbite.

Walking outside in the dark, especially as I prefer to without a light, is a bit of a gamble. It's mostly flat and easy to navigate, but there's a good number of invisible dips and rises. Sastrugi, wavelike ridges of hard snow formed and always changed by the wind, can rise or sink off-grade by several feet. In this lack of light, they're

From bottom left clockwise: the author shows how to layer up clothing for a walk outside, even in the summer

almost indistinguishable, and walking becomes a shuffling motion. I don't fall, but I stumble a few times, once dropping in up to my knees. Slow and steady is the way to go. I'll get there.

Almost three-quarters of the way down the flag line and the faint red light on the building I'm headed towards becomes visible. It's not particularly necessary for navigation to the site. It is mainly on to help me navigate the ever-changing drift on the downwind, and entrance, side of the building. A slippery misstep there and I'm sliding down under the elevated structure. If that happens, and I'm lucky, I'll miss the thick metal support structure holding the building up, and the thin cables keeping the structure taut against the wind. I'll be able to crawl my way back up and retry my erroneous first attempt. If I'm unlucky, then I'm glad I told someone where I was going. The site is right at the edge of the station's hand-held radio range. We attenuate the signal from the station's repeater during standard operation. That keeps the noise out of the sensitive telescopes and sensors in the Dark Sector. The thought of falling does not make it into my conscious mind while I'm walking along the flags; indistinct dark shapes whipping in the wind.

This time of year, the auroras are just really starting to put on a show. I stop to look behind me, back toward the station and the Dark Sector beyond that. The mystic green waves parade across the sky, a dance driven by charged particles from the sun. These particles, pulled to the Poles in the "cusp" region of Earth's magnetic field, excite atomic oxygen and nitrogen in the atmosphere. The resulting energy produces the green, red, and sometimes blue aurora australis seen in Antarctica, and the sister phenomenon aurora borealis in the Northern Hemisphere. It's mesmerizing.

It's also damn cold. As I turned, I faced directly into the wind coming from the Clean Air Sector. A mistake. I'm now acutely aware of the tiniest weaknesses in my face covering. It's a balaclava and two neck gaiters, but it's not perfect. I shiver and pull the longer of my two neck gaiters higher, now intruding upon my vision. I also tug my heavy winter hat down a little farther. The best arrangement leaves only a thin slit for vision. Goggles, useful in summer, fog up almost instantly when it's this cold. I take one more reverent glance at the auroras and turn, this time toward the downwind direction, and continue on my way.

The ice slowly reclaims everything man tries to build down here. The flag lines, the station, everything needs to be raised or dug out each summer. The station is designed for this. In the future, sections can be added to the pillars supporting the station, lifting it safely away from the ice.

The snowdrift at the base of the stairs isn't bad. Today brought the first real wind we've had in some time, so the drift has not had a chance to fill in the shoveling I did last week. That means only a couple minutes with the shovel and I'm ahead of the snow. It's always a competition. The ice slowly reclaims everything man tries to build down here. The flag lines, the station, everything needs to be raised or dug out each summer. The station is designed for this. In the future, sections can be added to the pillars supporting the station, lifting it safely away from the ice. Many outbuildings, including the one I'm looking up at now, are similarly elevated. The stillness of late has allowed a layer of snow to attach itself to every inch of the railings and stairs leading up to the building. It's a subtle and beautiful reminder of just how cold it is. Some of the snow falls from the stairs as I plod up them with my heavily insulated boots.

From the vantage point at the top of the stairs, and with the help of the dim red exterior light, I can see a couple flags that continue past the warm building. I helped place those the previous summer. Another few 100 yards, and one 45-degree turn, marked by crossed flags in the line, is a new experiment installed only a couple months ago. This deals with snow pack and accumulation.

Antarctica is a desert, receiving little actual precipitation. The wind moves a lot of snow around though. Past the new experiment, the world looks like the ocean, only frozen, white, and lifeless. It's both awe inspiring and terrifying.

Travel for hundreds of miles in any direction and

the view is the same. There are many things out there though. Drive a vehicle a short distance that direction and one would find a solitary flag line, not too far from where I'm standing now. It seems to extend to the horizon. In fact, five miles down its length, and past several small expansion vaults with coils of power and fiber optic lines in them, is a group of seismic measurement devices. The vaults contain loosely coiled cabling, which plays out as the ice shifts, the experiment remains connected to the station. We call that direction the Quiet Sector. The instruments are so sensitive that if I were to walk that direction, they would detect me. It is easy to imagine then how an earthquake anywhere in the world would be like a blazing light in darkness. I smile. I'm amazed and inspired by the diverse projects I get to help maintain.

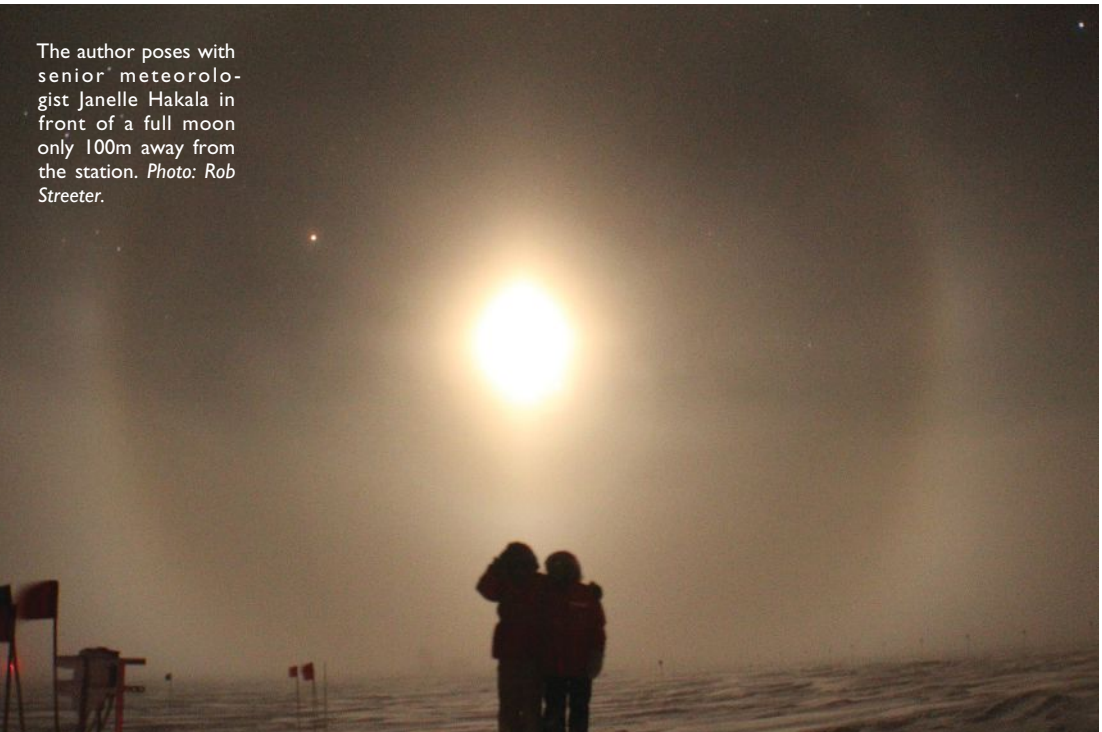
I shiver, involuntarily, and shed some of the soft snow crusting my outer layers. The wind ensures a fine dusting has covered everything exposed to the outside; filling the tiniest spaces and making it look like my clothes are trimmed in pure white. My balaclava and neck gaiters are frosting up, the moisture from my breath enough to begin freezing the garments solid. I can see the little spears of ice attached to my clothes and eyelashes, framing what I see with jagged crystal. I would love to share this image with friends and family back home, a view framed in ice, fleece, and blotted by frozen breath. A long blink and my eyes are difficult to open again. Time for some warmth.

I grab the handle on the large door; pull against the snow drifted at its foot, and duck inside, shutting the heavy, insulated door before the automatic lighting knows I'm around. All exterior doors are identical, only here, they keep the warmth on the inside. The lighting triggers after a few seconds, illuminating the small but comfortable space. It will take me less than five minutes to confirm what I already know: the array is up and running just fine. It took time and effort to get out here, but now I have eyes-on, I know beyond a doubt that everything is functioning correctly. Another check done, and another endless stream of scientific measurements queued to go north on the next satellite pass. It could have been any number of other locations too. Some instruments are in the elevated station and don't require me to go outside. Others are buried in vaults, often several meters below the surface, slowly being twisted and crushed by the shifting ice cap. Some are outside, exposed to the elements year-round. Others still, like the radar, are in heated, comfortable outbuildings. Tomorrow, it might be a completely different experiment, with a remarkably similar story. Time to don my layers again, switch off the light, and enjoy the auroras but avoid the wind, on the walk home.

I smile. I'm amazed and inspirethe world looks like the ocean, only frozen, white, and lifeless. It's both awe inspiring and terrifying. Travel for hundreds of miles in any direction and the view is the same.

Working at the South Pole is like that: adventurous, thorough, and cold. I get to go outside every day if I want to. I could check on an experiment or two; launch a weather balloon; observe, encode, and transmit the current weather conditions; lend a hand to a carpenter or telescope operator; or just take the trash out. The notion that "it's not my job" should never cross anyone's mind down here. I'm an electrical engineer by schooling. I've worked for the U.S. Air Force and for a communications company with less than ten employees. I'm savvy with the science and engineering. Knowing that some particular device detects and records extremely low frequency (ELF) signals and writes the data in real-time to a series of RAID (Redundant Array of Independent Disks) drives makes perfect sense to me. Figuring out how the automated pump house down in the Fuel Arch, our 450,000-gallon fuel storage facility buried 50 ft. beneath the ice, pumps specially formulated AN8 diesel fuel to various tanks and boilers around the station isn't quite so trivial. Learning synoptic weather coding, and using it to observe, encode, and transmit weather observations within the last ten minutes of the hour isn't a walk in the park.

There's much to do, and we're all in the same tin can together until that next flight comes in seven months. We have no choice but to resolve conflicts, fix malfunctions, improvise when needed, move forward, and get the job done. Every action outside, especially in the dark of winter, takes extra time, extra preparation. We cannot afford a serious injury, particu-



The author poses with senior meteorologist Janelle Hakala in front of a full moon only 100m away from the station. *Photo: Rob Streeter.*

An 18,000-piece puzzle has been a lasting source of entertainment for several people this winter season. Senior meterologist Janelle Hakala poses mid-placement. *Photo: Rob Streeter.*

larly now, when help is literally weeks away. A winter medevac is possible, but the last one required an extremely dangerous Twin Otter flight from Canada, down the Americas, to the British Antarctic Survey's Rothera Station on the Antarctic Peninsula. The last push, some eight hours one-way, is completely in the dark. The planes are never on the ground long, and they still could freeze to the ice. A little extra caution is worth not having to activate that system.

It's not all work at 90-degrees south though. Unlike a typical, state-side job, the 40 of us spending the austral winter here at Pole don't get to walk out the door, get into our cars, onto our bicycles, or into public transportation at the end of the workday. We don't get to open the door to our apartment or house and sit on our favorite sofa. There aren't loved ones or pets welcoming us "home" at the end of a long, stressful day. We live here, at the South Pole. To stay healthy, both physically and mentally, we have to recreate and take time for ourselves. Every Monday, for instance, I play a couple hours of basketball with around a dozen station-mates. Tuesdays, Robert Schwarz, the person with the most winter-overs on record (a whopping fourteen winters, eight consecutively) teaches a college-level astronomy class. Thursdays are travelogue and board game nights, which occupy much of the galley.

When it's not an organized recreational event, there's loads of movies (many on VHS or Betamax even), lots of games, and an 18,000-piece puzzle brought down by one of the IceCube operators. Regretfully, I haven't tracked the hours I've spent meticulously placing tiny pieces into the enormous puzzle. The cardio and weight gym is exceptionally well equipped. There's a "Run to McMurdo" event where we can tally the distance we've treadmilled, stationary biked, rowed, or skied. I'm on the list, and far from zero, but I don't think I'll make it. There is a decent selection of books in the two libraries. The band room has instruments from every corner of the globe, although it is "bring your own earplugs."

We celebrate holidays and birthdays almost as we would back in the outside world, just with bigger coats and colder toes. The galley staff puts together a truly spectacular spread almost every meal. This iteration of Amundsen-Scott Station (the third) is the first to feature a true chef's kitchen. Breakfast, lunch, and dinner are served up buffet style six days a week (they're closed on Sundays to give the crew a much deserved break). Burger day is popular, but so is the range of Indian dishes, sandwiches, casseroles, and soups. The variety is impressive: we don't repeat meals for five weeks or more. Everything is hearty and rich. It's easy to burn thousands of calories daily working out in the cold.

I might be ready to see plants, smell dirt, and see liquid water outside by the time I leave, but Amundsen-Scott South Pole Station will always be a place that changed my life and a place I'd love to return to.

On holidays, the galley goes all out. We're treated to plated, multi-course meals in winter. Sunset, our last observed holiday, started with cocktails and hors d'oeuvres and featured personalized menus and several courses of wonderfully prepared and portioned food. Holidays are a time to dress up and forget about the day-to-day worries.

Relationships are intense. It's a unique social environment in winter. While there is not much interaction with the rest of the world, we get continuous interaction among ourselves. There's little privacy, and no one has much in the way of secrets. All of us live and work within a comparatively small space. Dislike someone and the feeling is intensified as you see them around the station, at meals, while recreating, and during holidays and gatherings. It's not worth it to hold a grudge or leave a conflict unresolved. Easy or not, it's always worth it to have the tough discussions and move on. Friendships work the same way. You'll learn about someone quickly, and get to spend hours and hours a day with them. Needless to say, I've made friends for life.

I have thought a lot about my decision to come here. I left everything behind me: my recently purchased home, my friends, my family, my new truck, my old job, everything. It's a risk, to my career, to my friendships, even to my health and safety. Most people don't do this. What I've experienced is truly one of the most extraordinary opportunities on the planet.

Since the Amundsen-Scott South Pole Station was built in 1957, each person to winter-over has been assigned a serial number. People get one number, corresponding to their first winter-over. I'm only number 1,546. It's impossible to say how I'll feel at the end of the winter, when flights start coming in again and new faces invade the static population I've lived, worked, and played alongside for eight months. At this point though, I'd come back in a heartbeat. The place is unlike anywhere else. I might be ready to see plants, smell dirt, and see liquid water outside by the time I leave, but Amundsen-Scott South Pole Station will always be a place that changed my life and a place I'd love to return to.-

SPOTLIGHT

Airbus Goes East

Aviation Today reports that Airbus has opened a new nanocomposite materials research facility in collaboration with the National Center for Nanoscience and Technology of China.

The Airbus Beijing Engineering Center (ABEC) will allow them to "explore the use of electrically conducive nanocomposites for aeronautical applications." The research into polymer nanocomposites will be conducted jointly by ABEC engineers "and a group of top Chinese academies and universities, including NCNST, Tsinghua University, Sun Yat-Sen University, HK University of Science and Technology and Hong Kong Polytechnic University."

Airbus Commercial Aircraft China COO Francois Mery said, "Research and innovation are key drivers for Airbus and we think highly of China's innovation abilities."

Sexual Harassment

Sexual harassment is destroying the careers of far too many women, says a report from the National Academies of Sciences, Engineering, and Medicine on the prevalence of sexual misconduct in those fields.

The report estimates that half of women in science experience some form of harassment. It adds: "What is especially discouraging about this situation is that at the same time so much energy and money is being invested in efforts to attract and retain women in science, engineering, and medical fields, it appears women are often bullied or harassed out of career pathways in these fields."

The document, the result of a two-year study, aims to send a clear signal that the three societies are taking harassment seriously amid a growing conversation about how to combat such behavior in academe.

Chasing Skills

The New York Times reports that aviation and defense industries in Europe, Asia, and the Americas are "struggling to fill new positions created by increased military budgets."

The U.S. Bureau of Labor Statistics "put the increased demand for aerospace and mechanical engineers over the next decade at 6% to 9% and software developers and information security analysis at 24% to 28%."

According to Accenture Global Managing Director for Aerospace and Defense John Schmidt, the "U.S. defense budget is the big dog in global military spending." In a statement, The Boeing Company spokesman Chaz Bickers adds that while "competition for skills is fierce, we continue to attract and recruit incredible talent globally."

$1.5 Billion For Chips

Science Magazine reports on DARPA's new "program that aims to reinvigorate the chip industry with basic research into new designs and materials, such as carbon nanotubes."

The story says DARPA will invest "a total of $1.5 billion over 5 years" in both academic and industrial institutions. Stanford electrical and computer engineer Subhasish Mitra says the DARPA investments "will completely revolutionize how we design electronics" and help the industry move into the next step beyond silicon chips.

PEOPLE

Chaouki T. Abdallah, Ph.D., *Ohio Lambda '81*, is the new executive

vice president for research at Georgia Institute of Technology. He was provost and executive vice president for academic affairs at the University of New Mexico, where he spent 30 years, including time as acting president in 2017. Abdallah is an alumnus of Georgia Tech where he earned his master's and Ph.D. degrees in electrical engineering.

Bruce W. Berdanier, Ph.D., P.E., *South Dakota Alpha '80*, has become

dean of the college of engineering at South Dakota State University (SDSU). He was dean of the school of engineering at Fairfield University. Previously, he served as department head for civil and environmental engineering at SDSU. He has now replaced retiring dean **Lewis F. Brown,** Ph.D., *South Dakota Beta '84*.

Lori M. Bruce, Ph.D., *Alabama Delta '91*, has become the first woman to hold the top academic

position at Tennessee Tech University. She is the new provost and plans to highlight Tech's strengths in high technology and STEM-based disciplines while helping students understand the value of higher education. Bruce was previously an associate vice president and dean of the graduate school for Mississippi State University.

Janet M. Callahan, Ph.D., *Connecticut Beta '83*,

is the new dean of Michigan Technological University's college of engineering. She came from Boise State University, where she was chair and professor of the school of

materials science and engineering. Callahan joined Boise State in 2004 to help launch its new undergraduate program in materials science and engineering. She has been Advisor to Idaho Gamma, which she helped to install, since 2009.

Peter K. Kilpatrick, Ph.D., *Indiana Gamma '83*, has joined the Illinois Institute of Technology as the new provost and senior vice president for academic affairs. He was dean of engineering at the University of Notre Dame. He earned his Ph.D. in chemical engineering from the University of Minnesota and joined Tau Beta Pi as an eminent engineer in 2011.

Tod A. Laursen, Ph.D., *Oregon Alpha '86*, has been appointed as senior vice chancellor and provost at SUNY, The State University of New York. He moves from Khalifa University in Abu Dhabi, United Arab Emirates, where he was founding president and has served as leader since 2010. In 1992, Laursen joined the faculty at Duke University where he held appointments in civil, biomedical, and mechanical engineering. He specializes in computational mechanics.

Lesa B. Roe, *Florida Alpha '86*, is now chancellor of the University of North Texas System and is the first woman to lead UNT. She previously spent 33 years with NASA and as acting deputy administrator, she was responsible for general oversight of 17,000 NASA employees and 10 field centers across the nation. Roe also directed program and project teams on product/mission delivery, acquisition strategy, partnership and international strategy, and risk management.

Levi T. Thompson Jr., Ph.D., *Michigan Gamma '81*, has become dean of the University of Delaware's college of engineering. He was previously a chemical engineering professor at the University of Michigan. After graduating from UD, Thompson went on to earn two master's degrees and a doctorate from the University of Michigan.

Rashid Zia, Ph.D., *Rhode Island Alpha '01*, has been named the new dean of the college of engineering at Brown University. He was an associate professor of engineering and physics at Brown, where he graduated with a combined A.B. in English and American literature and Sc.B. in engineering. He returned to Brown in 2006 after completing his M.S. and Ph.D. in electrical engineering from Stanford University. Zia was a recipient of the NSF Career Award and was a ΤΒΠ Fellow in 2001. He has been an Advisor to Rhode Island Alpha.

Gina J. Lee-Glauser, Ph.D., *New York Nu '82*, has rejoined Clarkson University as chief research and scholarship officer. She received her B.S. and M.S. in mechanical and aerospace engineering from University at Buffalo and a Ph.D. from Clarkson. Lee-Glauser undertook postdoctoral work at NASA Langley Research Center and became a vice president for research position at Syracuse University.

FACILITIES

Texas A&M is partnering with the **University of California System** to lead a team awarded a five-year contract to run the Los Alamos National Laboratory. The extendable U.S. Energy Department contract, worth an estimated $2.5 billion annually, went to a limited liability company called Triad National Security, which consists of A&M, the California System, and Battelle Memorial Institute, a research and development organization.

The lab is currently operated by a consortium that includes Bechtel Corporation and the University of California, which has been involved in running the lab since the 1940s. However, low performance marks and a string of safety concerns led up to the National Nuclear Security Administration's announcement that they would solicit new contractors.

University of Nebraska-Lincoln Board of Regents have authorized a $75.4 million overhaul of "aging and inadequate" research labs and classrooms at the college of engineering."

Dean **Lance C. Pérez,** Ph.D., *Nebraska Alpha '87*, said keeping more graduates in the state "requires an investment in new engineering research labs and classrooms, which would draw high-quality faculty to the college, and with them, more research funding."

University of Utah is receiving up to $140 million for a large-scale experiment to develop new ways of extracting geothermal energy from "less-than-ideal locations."

The Department of Energy is financing a research laboratory to advance geothermal energy technologies and lead to more sources of American energy. The university currently has one traditional experimental well. The experiment will add two state-of-the-art horizontally drilled geothermal wells.

Profiles in Leadership #13

Clara Shih: Bestselling Author Who Thrives In The Boardroom

Clara Chung-Wai Shih, California Gamma '05, CEO and company founder

by **Alan S. Brown**

What does it mean to be a leader? In this series "Profiles in Leadership," Tau Beta Pi is exploring that essential question through the lives of member engineers who attained leadership positions in their fields.

Clara Shih was 29 when Starbucks asked her to join its board of directors. She had already written a bestseller and raised $21 million for her social media startup, yet she was intimidated.

Why wouldn't she be? She was replacing Sheryl Sandberg, Facebook's chief operating officer who would soon publish, *Lean In*, a book that changed the conversation about women in corporate America. Other board members were executives who ran multi-billion-dollar companies, venture capitalists, a former senator, and a former secretary of defense.

"I was the youngest person there by a decade, and I was incredibly intimidated," said Shih. "I've been intimidated my whole life. But every time I rise to the occasion—or not—I grow from it and shoot for the next thing."

The board recruited her because it wanted someone who understood social media and digital technology. Her perspective as a woman, an Asian, and a millennial (which represents a huge chunk of Starbucks customers) was a bonus.

It was not what she had expected. Members were open to new ideas and probing questions. "After the first few board meetings, they even urged me to speak up more," she said.

What really surprised her, however, was the board's belief that for-profit companies have a responsibility to make the world a better place.

"They were all about leadership, not just for the organization, but for society as well," Shih said. "I knew they were forward-thinking, but I was surprised how authentic and how deeply rooted that belief was. For many companies, corporate social responsibility is more of a PR tactic. At Starbucks, it's the heart and soul of the company."

Not a Natural Leader

Shih, herself, was not a natural leader. She was elected to Tau Beta Pi at Stanford University, where she graduated at the top of her class with a B.A. and M.S. in computer science. She had shot up the ranks at Google and Salesforce, then launched a business-oriented social media company, Hearsay.

"When I started hiring employees, they expected me to be leader," she said. "I had to step up. There's no forced leadership like being an entrepreneur. It might be your company, but your employees are fully invested. They've taken the full risk. That makes me responsible for them and their families."

That responsibility changed Shih: "I went from conflict-avoidant, growing up to embracing conflict before becoming more of a facilitator. Like Goldilocks and the Three Bears, I'm trying to find the right space in between."

Shih's story began in Hong Kong, where her father was a math professor and her mother taught art. They emigrated to Chicago when she was four.

The family struggled to earn a living, learn English, and fit into their new country. Her father became an engineer. Her mother returned to school for a degree in special education.

Shih went to elementary school. Since it had no program for non-English speakers, it placed her in a class of students with speech impediments. The constant repetition of sounds and words is why she has no noticeable accent, she said.

Clara Shih giving the commencement address at Stanford University in her senior year in 2005.

Her early years molded her thinking.

"Growing up in an immigrant family makes you grow up fast," she said. "My parents didn't speak the language, it was hard economically, and as I grew up, I wanted to contribute to the family.

"That translated into a desire for social justice. I know what it's like to not have money, privilege, or any power. I was always grateful for the opportunities afforded to me, and I want to make sure others have the same opportunities."

Her ambition gained momentum when she was admitted into the Illinois Mathematics and Science Academy (IMSA), a public three-year boarding school located in the Chicago suburbs. IMSA is a top high school for students interested in science and technology and a hotbed of future entrepreneurs. Its graduates include the founders of PayPal, YouTube, Yelp, SparkNotes, and OK Cupid, as well as technologists who worked at many leading internet firms.

"I felt like I had these role models and a ready-made network of people that I could learn from when I moved to California," Shih said. "It didn't seem so strange to start a company because I had seen all of them do it."

The school was a meritocracy and Shih excelled. She became captain of the women's varsity tennis team, concert mistress of the orchestra, editor of the student newspaper, and captain of the debate team. At 15, she spent a summer programming at the Fermi National Accelerator Laboratory. And she gave English lessons to immigrants.

"I rarely slept for more than five hours in high school," she recalled. "But the great thing about my school was that it gave us a lot of autonomy. I knew what I wanted to get done academically, and I had many degrees of freedom to do it."

The Meanest People She Had Ever Met

She made friends who are still close to this day. And she discovered some of the meanest people she had ever met.

"I was brutally bullied in my senior year," Shih said.

In many ways, all the ingredients were there. IMSA was a pressure cooker. It was filled with bright, competitive, academic achievers who all lived together. Everyone knew who got into their top college choices and who did not. Those interested in venting their frustrations had the brains to do it in the nastiest possible ways.

Shih became a target. There were slights and rumors. A student published an op-ed in the school paper that called Shih the devil. Many students thought it was hilarious and that it put her in her place. Shih felt alone and started to spiral into depression.

Her friends stopped it from going any further. A handful of students stood up for her against the bullies.

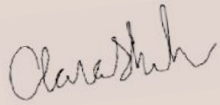
"Talk about leadership," Shih said. "That's a hard thing to do when you're 17."

Research shows one out of seven students experiences bullying in school, said Shih, who actively supports anti-bullying programs.

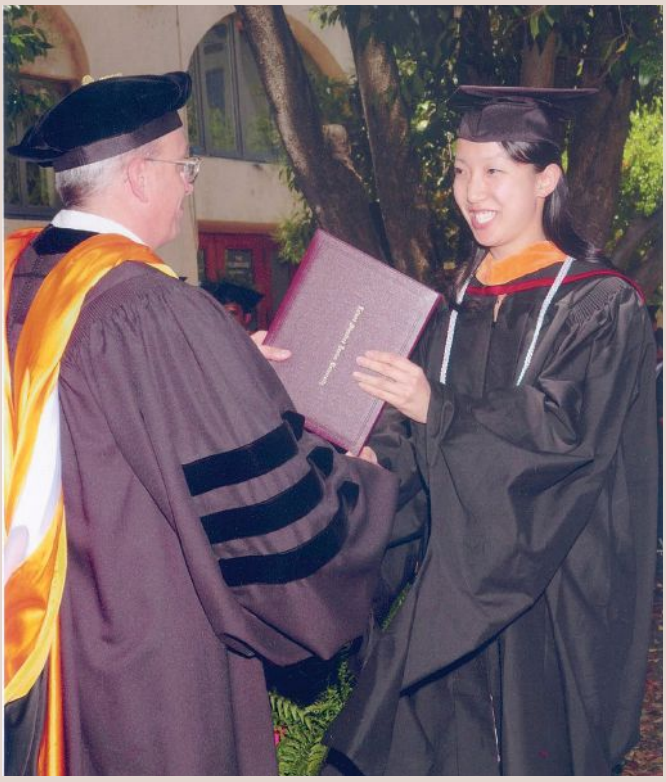
"All it takes is one person or a small number of people

This Leader In Brief

Full professional name: Clara Shih.
Most recent position: CEO, Hearsay.
Birthplace: Hong Kong, China, 1982.
Highest degree: M.S. Computer Science, Stanford University, 2005; and M.Sc. Internet Studies, University of Oxford, 2006.
Major career highlights: Product strategy and business operations, Google, 2004-06; general manager/head of product and marketing, AppExchange; Salesforce, 2006-09; author, *The Facebook Era*, 2009; CEO, Hearsay Systems, 2010-present; advisor and investor, Gusto, Color Genomics, Work4, Calify Health, BirdEye, Jewelbots, Goldieblox; author, *Social Business Imperative*, 2016.
Board memberships: Starbucks, 2011-present; Ad Council, 2012-14; and Camp Amelia, 2003-08.
Honors: Young Global Leader by the World Economic Forum, Fortune 40 Under 40; Ad Age 40 Under 40; Marshall Scholar; Mayfield Fellow in High-Tech Entrepreneurship; and Terman Engineering Fellow (for highest GPA in major) at Stanford University.
Greatest accomplishment: Starting new things.
Family: Married to Silicon Valley healthcare entrepreneur Daniel Chao. They have one son, Blake.
Hobbies: Travel, yoga, and cats.
Favorite book: *Enders Game* by Orson Scott Card.
Leader most admired: Sheryl Sandberg.
Personal motto: Carpe diem.
If you could do one thing over: No regrets.



Above: Shih on a swing as a young girl. **Below:** Shih graduated from Stanford University at the top of her class in computer science.



who are true friends to stand up. That's the difference between bad outcomes and people getting through it and becoming more resilient. I found out who my true friends were, and I got through it by developing tremendous grit and self-confidence," she said.

Shih entered Stanford looking for a fresh start. She also had an agenda: she wanted to learn software engineering and work at a startup.

"Stanford mints entrepreneurs," she said. "I had friends a few years ahead of me and they were already starting companies. I was surrounded and inspired by alumni. Larry Page, who co-founded Google, lectured our computer science class. Visits like that were an everyday thing on campus."

Shih threw herself into her work, but her experience at IMSA made her think about how she could help other people. She worked with students in poorer communities after class, and founded a nonprofit, Camp Amelia Technology Literacy Group, that created software to improve basic education in underserved communities.

She spent a year in Beijing doing field research for her honors thesis. In her senior year, she was named one of 10 Mayfield Fellows, a program that Shih calls "a mini-MBA on how to start a company."

Highly-structured Classes

The highly structured classes and internships taught her valuable business skills, from creating a cash flow statement to speaking in public. It also introduced her to an ecosystem of entrepreneurs, venture capitalists, and potential employers and partners.

Shih graduated at the top of her class, completing her bachelor's and master's degrees in computer science in four-and-a-half years. She received a Marshall Scholarship to earn a master's in internet studies at Oxford University starting in the fall, leaving her six months to do as she pleased.

She joined the tight-knit Bay Area community of Marshall and Rhodes Scholar alumni. At a winter event, Shih met Shona Brown, head of corporate strategy at Google. Brown offered her an internship until she left for Great Britain.

"As I got into it, I found I liked the team and the work," she said. "Google continued to employ me in the U.K. and hired me when I returned to the United States.

"I was the youngest person there by 10 years and the only one without a business degree, but I just worked hard. There was no job too small, so I was looped into a lot of projects."

It was a great job, yet she left: "I lived in San Francisco and loved it. There was something new every night and there were lots of exciting people. Despite working hard, I strived to have a work-life balance. The commute to Google's headquarters in Silicon Valley crushed my day. I stopped exercising and seeing my friends. I was becoming burned out at 23, so I had to find a job in the city."

Working with Google's sales team, Shih discovered customer relationship management (CRM) software

which helps manage interactions with customers.

"I didn't learn about it at college, but it is the biggest, most important category of enterprise software," she said.

That's where she decided she wanted to be. She applied to Salesforce, a CRM leader, for a job in corporate development "because it sounded like strategy." She did not get the job, but her resume caught the eye of the head of product marketing.

"I didn't know what that was, but it turned out to be my calling," Shih said. "It sits at the intersection of engineering, new products, customers, and sales. It's about connecting the dots, listening to the market, and translating its feedback into what gets built."

Within three years, she rose from associate product manager to running a major product, Salesforce's app exchange. That happened just as social media was starting to take off.

Sales teams were beginning to use the new Facebook site to find customers and identify shared common interests. At a friend's request, she coded an app, Faceforce, which saved that Facebook data as part of a Salesforce contact record. Her friend told his friends and customers and news spread.

Suddenly, Shih was on the map. At 25, Shih was a pioneer of social media selling. Journalists interviewed her. She was invited to speak at conferences. She was flooded with emails. Her book, *The Facebook Era: Tapping Online Social Networks to Build Better Products, Reach New Audiences, and Sell More Stuff*, became a bestseller.

"I pitched my boss on the idea of building out Faceforce and monetizing it," Shih said. "He thought it was a terrible idea. He thought Facebook was for kids, and it was going away like MySpace."

So, at 27, she left Salesforce and started Hearsay with Steve Garrity, a Microsoft product developer and another Mayfield Fellow. Within two years, they had raised $21 million in venture funding and added another $30 million in 2013.

Above: Shih at a picnic with members of her team at startup Hearsay, a social media developer. **Below:** Shih acts as a mentor at SHE-CAN, an organization that gives scholarships to women from post-conflict countries so they can return home as change agents.

Evolved Over Years

Hearsay has evolved over the years. Shih launched it as a general social media sales platform. Today, Hearsay caters to insurance and financial professionals, using sophisticated artificial intelligence to track social media and market services.

Shih has also changed. As Hearsay grew to 100 and then more than 200 workers, she moved from a hands-on leader to executive. Her understanding of leadership changed too.

"It's hard to put a finger on what leadership really means," Shih said. "Right now, I think you have to bring people together and rally them around an important cause that's bigger than any individual. If you do that, you make people better in the process."

Her experience on the Starbucks board also taught her what it means to be an authentic leader: "Because I grew up fast and was always the youngest person on my team or role, I unconsciously put a barrier between the work version of myself and personal version of myself.

"What I learned at Starbucks is that you can be the same person and make leadership deeply personal. It's more sustainable. A lot of this is around trusting and creating trust from others, feeling comfortable being vulnerable, and bringing your whole self to work and to everything you do."

Quite a transformation for someone who was intimidated much of her life.

Alan S. Brown has been an editor and freelance writer for more than 30 years and lives in Dayton, NJ *(insight01@verizon.net)*. A member of the National Association of Science Writers and former co-chair of the Science Writers in New York, he graduated magna cum laude from New College at Hofstra University in 1974. He is an associate editor of *Mechanical Engineering* and contributes to a wide range of engineering and scientific publications.

Tau Beta Pi Names 288 Scholars for 2018-19

THE FELLOWSHIP BOARD has announced the selection of 288 Tau Beta Pi Scholars from 378 applicants for undergraduate study during the 2018-19 academic year. Most recipients will receive a cash award of $2,000 for their senior year of engineering study, and a few will receive $1,000 for one semester.

All ΤΒΠ Scholarships are awarded on the competitive criteria of high scholarship, campus leadership and service, and promise of future contributions to the engineering profession. All scholars are members of the Association.

The recipients have chosen the following engineering curricula: 81 mechanical, 48 chemical, 32 electrical, 25 biomedical, 23 civil, 10 aerospace, 9 computer, 8 materials science, 6 electrical & computer, 6 engineering, 6 industrial, 5 bioengineering, 4 biological, 4 computer science, 4 petroleum, 3 civil & environmental, and 2 each of environmental, geological, and metallurgical. In addition, 8 are studying the following engineering curricula: aerospace & mechanical, architectural, ceramic & materials, chemical & biochemical, chemical & materials science, civil & mechanics, cyber, and nuclear.

All of this year's scholarships are named for members or corporations. The **Nagel Scholarships** are given in honor of former Secretary-Treasurer Emeritus Robert H. Nagel, P.E., *NY Δ '39*. Named Editor of *The Bent* in 1942, he became Secretary-Treasurer and Editor in 1947 and served until October 1982 when he was named Secretary-Treasurer Emeritus.

The **Record Scholarships,** awarded for the first time in 2001, commemorate Leroy E. Record, *KS A '29*, whose generous bequest will provide earnings to support awards in perpetuity.

The **Stabile Scholarships** are named for Vincent A. Stabile, *NY Λ '40*, whose gifts to the Association, along with gifts from the Vincent A. Stabile Foundation, have permanently endowed scholarships.

In 2005, Henry M. Alford, *MS A '27*, left a bequest to the Association sufficient to permanently endow the **Alford Scholarships.**

The **Althouse Scholarship** honors Ernest E. Althouse, *PA A '26*, who left a bequest in 2006. Thomas R. Berthold, *IL A '70*, made a generous gift in 2018 to permanently endow a **Berthold Scholarship** for a student member of the Illinois Alpha Chapter. The **Bloomberg Scholarship** is named for Michael R. Bloomberg, *MD A '64*, whose 2006 gift has funded one award for twelve years. The **Brems Scholarships** are named for Marian K. and John H. Brems Jr., *MI Γ '46*, who left a bequest to the Association in 2016. The **Boysen Scholarship** is named for Robert L. Boysen, *NJ B '63*, who made a gift to support a scholarship for a commuter student at a New Jersey or Pennsylvania chapter of Tau Beta Pi.

Ruth M. and Cleveland L. Campbell, P.E., *IA A '47*, made gifts to permanently endow the **Campbell Scholarships.** Col. Dennis E. Crouch, USAF Ret., *MI Γ '62*, made gifts to fund the **Crouch Scholarship,** which support students majoring in aerospace engineering, computer science, or cyber-warfare. A 2007 bequest from the estate of Richard A. Curtis, Ph.D., *OH A '64*, permanently endows the **Curtis Scholarships.**

The **Dechman Scholarship** was established in 2015 by David, *VA B '82*, Ken, and Jim Dechman, *TX A '89*, to honor their father, Don A. Dechman, *TX A '58*, on the occasion of his 80th birthday. The **Dodson Scholarships** are sponsored by the late Charles R. Dodson, *MD B '30*, who made generous gifts to the Association in 1998 and 1999. Placed in the C.R. Dodson Scholarship Fund, its investment earnings will support the program in perpetuity. The **Faidley Scholarships** are named for LeVern W. Faidley, Ph.D., *IA A '67*, who made a gift in 2018 to support two scholarships.

The five **James Fife Scholarships** are presented in memory of the father of the late member William Fife, *CA A '21*. The **Forge Scholarships** are named for Charles O. Forge, *CA Γ '56*, who left a bequest to Tau Beta Pi in 2010. The wife of Eddie L. Lyons, *CA Π '76*, made gifts in his memory to finance the **Lyons Scholarships.** Thomas L. Maniscalco, DEN, *NY E '67*, made gifts in memory of his parents, Frances and Joseph Maniscalco, for the **Maniscalco Scholarships** to be given to an engineering student at NY Rho and NJ Beta.

The **Schwaller Scholarship** commemorates Shawn R. Schwaller, *SD A '95*, whose friends and family established a fund in 2007. The **Scribner Scholarships** are named for A. Clayton Scribner, *NY Γ '29*, whose bequest to the Association in 2003 permanently endows the awards. The **Sickafoose Scholarship** is named for Kathleen A. and Robert D. Sickafoose, *IL B '50*, who left a bequest to the Association in 2012.

Glenn A. Skaggs, *MD B '57*, left a bequest to the Association in 2017 to permanently endow the **Skaggs Scholarship.** The two **Soden Scholarships** are named for Archie D. Soden, *CA Δ '51*, who has made gifts to Tau Beta Pi to fund scholarships in perpetuity. Elsa and Peter H. Soderberg, *CT A '68*, sponsor the Tau Beta Pi–**Soderberg Scholarships,** awarded for the 18th year. The **Van Wagenen Scholarship** honors William E. Van Wagenen, *NY Θ '78*, who made gifts to support the program.

Corporations sponsor the remaining scholarships. The

Alabama Power Foundation, Inc. made a gift in 1995, which is now sufficient to endow an **Alabama Power Scholarship,** awarded for the 15th time this year. The Bose Foundation made a gift in 2018 to sponsor the 12th **Bose Scholarship.** Awarded for the 10th year, the **GEICO Scholarship** is sponsored by GEICO Insurance. The **Lindeburg Scholarship** is sponsored by Professional Publications, Inc., and named for its past president, Michael R. Lindeburg, P.E.

•Details of the scholars are at *https://www.tbp.org/memb/ScholarArchives/ScholarBios/ScholarBios18-19.pdf*

RECIPIENT	CHAPTER	FIELD OF STUDY	SCHOLARSHIP
Shisir Acharya	LA E '19	Mechanical Engineering	GEICO No. 64
Muhammad O. Aftab	IL B '18	Mechanical Engineering	Stabile No. 567
John N. Aguillard	LA Γ '19	Electrical Engineering	Alford No. 14
Abdullah S. Al Bayati	TX E '18	Mechanical Engineering	Record No. 1348
Mohammad E. Alim	AL Δ '19	Electrical and Computer Engineering	Stabile No. 568
Andrea J. Allen	MI Z '19	Chemical Engineering	Dechman No. 4
Matthew Avallone	NY P '19	Electrical Engineering	Maniscalco No. 2
Parker A. Awerkamp	UT B '19	Electrical Engineering	Collins No. 1
Praveen Bagavandoss	NY Δ '19	Chemical Engineering	Nagel No. 48
Sydney Bailes	DC Γ '19	Biomedical Engineering	Stabile No. 569
Rachel A. Bailey	OH M '19	Biomedical Engineering	Campbell No. 41
Gaurav Balakrishnan	PA Γ '19	Materials Science and Engineering	Stabile No. 570
Audrey K. Balaska	NH A '19	Mechanical Engineering	Stabile No. 571
Amanda M. Barbarossa	WV A '19	Biomedical Engineering	Stabile No. 572
William J. Barnard	TN Z '19	Engineering	Stabile No. 573
Robert J. Beem	OK A '19	Aerospace and Mechanical Engineering	Record No. 1349
Jessica A. Bellows	RI A '19	Biomedical Engineering	Stabile No. 574
Kate J. Benfield	ID Γ '19	Mechanical Engineering	Forge No. 66
Lily F. Benig	IL A '19	Bioengineering	Berthold No. 1
Camille E. Bergin	TN A '19	Aerospace Engineering	Brems No. 6
Max J. Bieryla	CT Γ '19	Engineering	Stabile No. 575
Haley E. Bigando	NY B '19	Civil Engineering	Stabile No. 576
Michael A.M. Bilan	AK A '19	Computer Engineering	Skaggs No. 1
Lindsey E. Blanshan	IN A '19	Chemical Engineering	Halligan No. 1
Tonle C. Bloomer	MD B '19	Electrical Engineering	Dodson No. 67
Christopher J. Brock	NM B '19	Chemical Engineering	Record No. 1350
Marissa C. Brock	SC A '19	Bioengineering	Stabile No. 577
Farrell R. Brown	CT B '19	Biomedical Engineering	Stabile No. 578
Andrew J. Brumar	MI Z '19	Mechanical Engineering	Stabile No. 579
Andrew P. Budd	MO E '19	Mechanical Engineering	Record No. 1351
Abby L. Burke	KY A '19	Civil Engineering	Stabile No. 580
Tanner K. Burton	UT B '19	Mechanical Engineering	Record No. 1352
Devin S. Cain	MD B '19	Mechanical Engineering	Dodson No. 68
Sebastian A. Calderon	IL Z '19	Computer Engineering	Stabile No. 581
Joseph D. Carlson	TX Δ '19	Aerospace Engineering	Brems No. 7
Sabrina R. Carroll	SC B '19	Mechanical Engineering	Stabile No. 582
William H. Carroll	OK Γ '19	Mechanical Engineering	Record No. 1353
Mindy K. Castle	SD A '19	Civil Engineering	Record No. 1354
Seth A. Caudle	TN Z '19	Engineering	Stabile No. 583
George J. Cazenavette V	LA Γ '19	Cyber Engineering	Record No. 1355
Dennis Chacko	MD Δ '19	Chemical Engineering	Stabile No. 584
Chin Hung Chao	CA M '18	Computer Engineering	Record No. 1356
Prerak Chapagain	LA E '19	Electrical Engineering	AL Power No. 15
Eric C. Chen	CT A '19	Biomedical Engineering	Stabile No. 585
Yitian Chi	NC A '19	Mechanical Engineering	Stabile No. 586
Colleen Chlastawa	NM B '19	Chemical Engineering	Record No. 1357
Jason A. Christensen	UT B '19	Mechanical Engineering	Record No. 1358
Thomas A. Christensen II	WY A '19	Chemical Engineering	Record No. 1359
Daniel B.K. Chu	CA Σ '19	Chemical Engineering	Fife No. 24
Ryan P. Collanton	CA Σ '19	Chemical Engineering	Fife No. 25
Maggie A. Collier	AL Γ '18	Electrical Engineering	Alford No. 15
Stefan L. Colton	CT A '19	Mechanical Engineering	Stabile No. 587
Nathaniel A. Conley	OH Ξ '19	Mechanical Engineering	Stabile No. 588

RECIPIENT	CHAPTER	FIELD OF STUDY	SCHOLARSHIP
Jose E. Covarrubias Ameca	NY Δ '18	Chemical Engineering	Stabile No. 589
Michael R. Cox III	AL E '19	Mechanical Engineering	Stabile No. 590
Maciej Czyz	AZ Δ '19	Aerospace Engineering	Record No. 1360
Megan E. Dague	IL Z '19	Electrical Engineering	Stabile No. 591
Taylor M. Davis	UT B '19	Mechanical Engineering	Record No. 1361
Carisa A. Dekalb	VT B '19	Mechanical Engineering	Stabile No. 592
Sarah K. Desharnais	OK Γ '19	Chemical Engineering	Record No. 1362
Ricem M. Diaz Arroyo	PR A '18	Chemical Engineering	Record No. 1363
Jordan C. Disberger	KS Γ '19	Electrical Engineering	Hoover No. 1
Michael R. Doane	MA Θ '19	Chemical Engineering	Stabile No. 593
Nicole B. Doughramaji	KS Γ '19	Mechanical Engineering	Stabile No. 594
Christopher J. Ellis	OH Γ '18	Computer Science and Engineering	Record No. 1364
Meghan V. Englert	DC Γ '19	Mechanical Engineering	Stabile No. 595
Jacob B. Erickson	VT B '19	Mechanical Engineering	Stabile No. 596
Skye S. Erickson	IA A '19	Materials Engineering	Campbell No. 42
Larissa D.P. Eshelman	KS Γ '19	Architectural Engineering	Stabile No. 597
Thomas R. Everson	KY Γ '18	Electrical Engineering	Stabile No. 598
Emily Fang	NY P '19	Chemical Engineering	Stabile No. 599
McKinley J. Forster	SC Γ '19	Civil Engineering	Stabile No. 600
Jessica L. Francis	WV A '19	Civil and Environmental Engineering	Scribner No. 43
Paige F. Frank	MD A '19	Biomedical Engineering	Dodson No. 69
Marissa A. Frazee	IN B '19	Biomedical Engineering	Stabile No. 601
Eileen M. Freres	WI Γ '19	Civil and Mechanics Engineering	Stabile No. 602
Ian M. Galbreath	MO E '19	Biomedical Engineering	Record No. 1365
Carlos A. Gallegos Tovar	AL Γ '19	Biomedical Engineering	Record No. 1366
Arielle Marie R. Gamboa	NJ B '19	Mechanical Engineering	Maniscalco No. 3
Shubhankar M. Gandhi	IN B '19	Mechanical Engineering	Stabile No. 603
Ayush Giri	DC A '19	Mechanical Engineering	Stabile No. 604
Samantha M. Gladd	NY Θ '19	Mechanical Engineering	Van Wagenen No. 2
Logan J. Gonzalez	AL E '19	Mechanical Engineering	Record No. 1367
Thomas J. Gouger	IL Δ '18	Industrial Engineering	Record No. 1368
Elizabeth M. Grace	SC B '19	Chemical Engineering	Stabile No. 605
Kevin P. Greenman	MI Γ '19	Mechanical Engineering	Stabile No. 606
Justin R. Greenwood	CT B '19	Electrical Engineering	Stabile No. 607
Steven A. Grosz	MI A '19	Mechanical Engineering	Stabile No. 608
Huilai Gu	PA A '19	Chemical Engineering	Stabile No. 609
Binghao Guo	IL Γ '19	Materials Science and Engineering	Stabile No. 610
Kexi Guo	PA B '19	Chemical Engineering	Stabile No. 611
Kartik Gupta	TX H '19	Computer Science	Record No. 1369
Shivani Gupta	NJ Z '19	Biomedical Engineering	Stabile No. 612
Evan K. Halloran	NY Δ '19	Mechanical Engineering	Nagel No. 49
Jonathan M. Hamburger	AZ Δ '19	Aerospace Engineering	Record No. 1370
Andrew B. Hamlin	NY M '19	Mechanical Engineering	Stabile No. 613
Aileen Han	CA I '19	Mechanical Engineering	Forge No. 67
Yuntian Han	OH A '19	Mechanical Engineering	Curtis No. 12
Yutian Han	PA E '19	Mechanical Engineering	Stabile No. 614
Christopher D. Harville	AL E '19	Mechanical Engineering	Record No. 1371
Matthew Hunter J. Haufler	KS Γ '19	Computer Engineering	Stabile No. 615
Jun Yan He	UT A '19	Mechanical Engineering	Record No. 1372
Lauren Henderson	PA Θ '19	Computer Engineering	Stabile No. 616
Emily R. Hertz	ND B '19	Geological Engineering	Record No. 1373
Connor S. Hickey	IN Δ '19	Civil Engineering	Stabile No. 617
Tanner J. Hickman	AL E '19	Chemical Engineering	Record No. 1374
Thomas A. Holtslander	AL A '19	Industrial Engineering	Record No. 1375
Megan L. Hooper	ME A '19	Chemical Engineering	Stabile No. 618
Amanda C. Hornick	NY K '19	Biomedical Engineering	Stabile No. 619
Marissa A. Horstman	AL E '19	Chemical Engineering	Record No. 1376
Margaret L. House	NM Γ '19	Chemical Engineering	Record No. 1377
Emily Huffer	SC A '19	Industrial Engineering	Stabile No. 620
Zain Hussaini	NY Γ '19	Mechanical Engineering	Stabile No. 621
Peter R. Hyatt	CA Φ '19	Mechanical Engineering	Fife No. 26

RECIPIENT	CHAPTER	FIELD OF STUDY	SCHOLARSHIP
Kyle J. Jackson	IA A '19	Chemical Engineering	Stabile No. 622
Trevian Jenkins	AL Δ '19	Electrical and Computer Engineering	Record No. 1378
Nathan T. Jessurun	OH N '19	Computer Engineering	Stabile No. 623
Amanda J. Jones	AL Γ '19	Biomedical Engineering	Record No. 1379
Gwendoline Jones	OR Δ '19	Civil Engineering	Faidley No. 3
Wanjiku Kanjumba	FL I '20	Aerospace Engineering	Stabile No. 624
Abhiram Karuppur	NJ Δ '19	Chemical Engineering	Stabile No. 625
Erika L. Kasen	IN E '19	Biomedical Engineering	Stabile No. 626
Valerie E. Kay	SC B '19	Chemical Engineering	Stabile No. 627
Nikita Kedia	MD B '19	Bioengineering	Dodson No. 70
Cody D. Keith	AK A '20	Petroleum Engineering	Soden No. 10
Karl M. Keller	SD A '19	Metallurgical Engineering	Record No. 1380
Christopher Y.J. Kim	IL Γ '19	Mechanical Engineering	Record No. 1381
Hanseul Kim	IL B '19	Computer Engineering	Record No. 1382
Jihyuk Kim	AL A '19	Chemical Engineering	Record No. 1383
Averyonna R. Kimery	SD A '19	Metallurgical Engineering	Record No. 1384
Joshua M. Kirby	CO B '17	Aerospace Engineering Science	Curtis No. 13
Jacqueline M. Kitten	IN Δ '19	Mechanical Engineering	Stabile No. 628
Jared I. Klimek	OH N '19	Mechanical Engineering	Stabile No. 629
Zade Koch	NY Y '19	Civil Engineering	Stabile No. 630
Rebecca Korovin	NJ Z '19	Electrical Engineering	Stabile No. 631
Bridger A. Kowalczyk	OH Λ '19	Chemical Engineering	Stabile No. 632
Alexander D. Kral	NM Γ '19	Electrical Engineering	Record No. 1385
Viktoriia Kriuchkovskaia	IA A '18	Chemical Engineering	Record No. 1386
Nicholas Kwiecinski	IN Δ '19	Computer Engineering	Stabile No. 633
Mikio LaCapra	NJ B '19	Ceramic and Materials Engineering	Stabile No. 634
Adam C. Ladd	IL A '19	Materials Science and Engineering	Stabile No. 635
Mariah R. Lafond	TN A '19	Mechanical Engineering	Record No. 1387
Dylan L. Lantis	OK A '20	Chemical Engineering and Material Science	Record No. 1388
Nathan D. LaTourette	NH A '19	Civil Engineering	Stabile No. 636
Christopher Lee	PA Γ '19	Chemical Engineering	Stabile No. 637
Hunter J. Lee	UT B '19	Chemical Engineering	Record No. 1389
Hyong Hark Lee	PA K '19	Engineering	Stabile No. 638
Jessica J. Lee	CA T '19	Mechanical Engineering	Record No. 1390
Samantha M. Leshikar	CO A '19	Petroleum Engineering	Soden No. 11
Francesca-Zhoufan Li	CA A '19	Bioengineering	Lindeburg No. 9
Qian Liang	CT A '19	Mechanical Engineering	Stabile No. 639
Chantelle Y.Y. Lim	NY K '19	Biomedical Engineering	Soderberg No. 29
Nathan V.M. Lindsay	NM A '19	Mechanical Engineering	Record No. 1391
Heather L. Lukas	NY Δ '19	Biological Engineering	Nagel No. 50
Walker J. Magrath	NY A '19	Biomedical Engineering	Stabile No. 640
Sabbu Maharjan	NY Ξ '19	Electrical Engineering	Stabile No. 641
Casey Main	IN Δ '19	Mechanical Engineering	Stabile No. 642
Celeste B. Marsan	MA A '19	Chemical Engineering	Stabile No. 643
Christopher R. Marsh	MA E '19	Chemical Engineering	Stabile No. 644
Ryan G. Mason	MT A '19	Chemical Engineering	Record No. 1392
Evan M. Mazur	AL E '19	Civil Engineering	Record No. 1393
Louis T. Mazza	NY T '19	Bioengineering	Stabile No. 645
Noah J. McDaniel	OR A '20	Industrial Engineering	Record No. 1394
Gillian S. McGlothin	TN A '19	Aerospace Engineering	Stabile No. 646
Brooke A. McMurrer	TN A '18	Nuclear Engineering	Record No. 1395
Kathleen B. McPartland	FL E '18	Mechanical Engineering	Record No. 1396
Jenna L. Meert	IN Δ '19	Civil Engineering	Record No. 1397
Zeb W. Mehring	CT A '19	Electrical and Computer Engineering	Stabile No. 647
Krutant J. Mehta	OH M '19	Electrical Engineering	Crouch No. 4
Austin R. Mello	ID Γ '19	Material Science and Engineering	Record No. 1398
Francisco J. Menchaca	TX N '19	Mechanical Engineering	Record No. 1399
Bryce A. Messer	VA Γ '19	Mechanical Engineering	Stabile No. 648
Claudia M. Mezey	CT A '19	Mechanical Engineering	Stabile No. 649
Julia D. Mihaylov	AZ Δ '19	Aerospace Engineering	Forge No. 68
Alex B. Mikes	OR A '19	Mechanical Engineering	Record No. 1400

RECIPIENT	CHAPTER	FIELD OF STUDY	SCHOLARSHIP
Angie Mitchell	KS Γ '19	Civil Engineering	Record No. 1401
Nikka M. Mofid	CA T '18	Aerospace Engineering	Fife No. 27
Brady G. Moon	UT B '19	Electrical Engineering	Record No. 1402
Ashleigh F. Moore	AL E '19	Chemical Engineering	Record No. 1403
Branden M. Moreau	IA A '19	Chemical Engineering	Campbell No. 43
Anthony A. Nagygyor	CO A '19	Chemical Engineering	Schwaller No. 8
Tasneem Naheyan	KY A '19	Electrical Engineering	Stabile No. 650
Iman S. Nandi	MA Θ '19	Electrical and Computer Engineering	Stabile No. 651
Theresa M. Neubig	MD Γ '19	Electrical Engineering	Lyons No. 5
Tara L. Newman	NC Δ '20	Mechanical Engineering	Stabile No. 652
Trang T. Ngo	MA Δ '19	Chemical Engineering	Stabile No. 653
Alexander J. Nolan	CO B '20	Environmental Engineering	Scribner No. 44
Timothy B. Nysetvold	UT B '18	Mechanical Engineering	Forge No. 69
Jasmine Ohi	DC B '19	Civil Engineering	Stabile No. 654
Jerrell Y.S. Ong	OH Γ '18	Mechanical Engineering	Record No. 1404
Hanna B. Opdahl	UT B '19	Civil Engineering	Record No. 1405
Moath Othman	VA E '19	Electrical Engineering	Record No. 1406
Manasi E. Paste	SD A '19	Computer Science	Record No. 1407
Clayton D. Penney	VA Δ '19	Electrical Engineering	Stabile No. 655
Nicholas A. Peterson	SD B '19	Civil Engineering	Record No. 1408
Robert M. Petras	LA A '19	Petroleum Engineering	Record No. 1409
Andrew J. Phillips	NM A '20	Electrical Engineering	Record No. 1410
Dustin M. Pierce	ID A '19	Biological Systems Engineering	Record No. 1411
Neha Potdar	VA E '19	Biomedical Engineering	Stabile No. 656
Allie M. Powers	AL E '19	Mechanical Engineering	Record No. 1412
Stephen E. Price	CT B '20	Mechanical Engineering	Stabile No. 657
Zvonimir Pusnik	NE A '19	Mechanical Engineering	Record No. 1413
Stuart A. Ramsey	CO A '19	Chemical Engineering	Record No. 1414
Alexander M. Ratcliff	WA A '19	Civil and Environmental Engineering	Scribner No. 45
Yana L. Rawinski	WI B '19	Biomedical Engineering	Record No. 1415
Charles C. Rawlins	MT B '19	Electrical Engineering	Record No. 1416
Mathew S. Reed	AL A '18	Mechanical Engineering	Record No. 1417
Yi Ren	IL A '17	Chemical Engineering	Stabile No. 658
Soo Y. Rhee	AL Δ '18	Mechanical Engineering	Record No. 1418
Rachel Rhoades	AZ B '20	Mechanical Engineering	Forge No. 70
Nathan M. Rice	ID Δ '18	Mechanical Engineering	Faidley No. 4
Heath Richards	WY A '18	Mechanical Engineering	Record No. 1419
Ethan T. Riddle	TN A '19	Civil Engineering	Stabile No. 659
Katherine A. Riedel	KS A '19	Mechanical Engineering	Record No. 1420
Benjamin M. Ringel	IL Δ '19	Mechanical Engineering	Stabile No. 660
Alexis Rios	CA I '20	Mechanical Engineering	Fife No. 28
Lucy A. Rittenberg	SC B '19	Mechanical Engineering	Stabile No. 661
Thomas P. Roberts	IN B '19	Mechanical Engineering	Record No. 1421
Chelsey A. Rock	MI B '19	Materials Science Engineering	Stabile No. 662
Christian D. Romano	AL Γ '19	Civil Engineering	Record No. 1422
Rachel R. Romano	MD B '19	Mechanical Engineering	Record No. 1423
Jonathan P. Ruesch	UT Γ '18	Mechanical Engg	Record No. 1424
Ethan J. Russell	KY A '18	Civil Engineering	Record No. 1425
Brandon M. Ruszala	NY N '19	Biomedical Engineering	Soderberg No. 30
Alvaro Sahagun	IL Z '19	Electrical Engineering	Stabile No. 663
Parthib T. Samadder	CT A '19	Electrical Engineering and Computer Sci	Stabile No. 664
Robert T. Sanders	AK A '19	Geological Engineering	Record No. 1426
Gabrielle S. Santamorena	CA M '19	Electrical Engineering	Forge No. 71
Ritabrata Santra	MS A '19	Petroleum Engineering	Record No. 1427
Alexander J. Schodt	NC Z '19	Engineering	Stabile No. 665
Rachel Schornak	MN A '19	Biomedical Engineering	Record No. 1428
Marshall G. Schoth	LA Γ '19	Biomedical Engineering	Record No. 1429
Mark R. Schwartz	MO E '19	Biomedical Engineering	Record No. 1430
Nicholas J. Seier	NE A '18	Biological Systems Engineering	Record No. 1431
John Seifert	SD A '19	Mechanical Engineering	Record No. 1432
Kayli R. Senedak	OH E '19	Civil Engineering	Record No. 1433

RECIPIENT	CHAPTER	FIELD OF STUDY	SCHOLARSHIP
Ishaan V. Shetye	SD A '18	Electrical Engineering	Record No. 1434
Shashwati Shradha	SD A '20	Computer Science	Record No. 1435
Abhijaya Shrestha	MS B '18	Mechanical Engineering	Record No. 1436
Rachel L. Silcox	IN Δ '19	Mechanical Engineering	Record No. 1437
Gavin J.F. Silveira	SD A '18	Mechanical Engineering	Record No. 1438
Paige L. Skinner	ID Γ '19	Material Science and Engineering	Forge No. 72
David J. Skrovanek	PA Λ '19	Electrical Engineering	Althouse No. 10
Jacob Smith	CA Φ '19	Civil Engineering	Forge No. 73
Edgar O. Soriano Somarriba	AR A '19	Civil Engineering	Record No. 1439
Daniel Sousa Schulman	MN A '19	Mechanical Engineering	Record No. 1440
Lillian Stewart	NH A '19	Mechanical Engineering	Record No. 1441
Reed D. Streets	LA Γ '19	Electrical Engineering	Bose No. 12
Allison E. Strong	IN A '19	Chemical Engineering	Sickafoose No. 6
Valentino Sudaryo	MA B '19	Biological Engineering	Stabile No. 666
Matthew D. Sundheim	WA B '20	Chemical Engineering	Forge No. 74
Anika Tabassum	NY N '19	Environmental Engineering	Scribner No. 46
Phacharapol Tanasarnsopaporn	PA A '19	Materials Science and Engineering	Stabile No. 667
Beau A. Tetreault	ND B '19	Chemical Engineering	Record No. 1442
Chanon Thanitcul	MD A '19	Biomedical Engineering	Bloomberg No. 12
Brenton W. Thompson	SD B '19	Electrical Engineering	Lyons No. 6
Emily R. Triolo	NJ Z '19	Biomedical Engineering	Boysen No. 2
Matthew A.R. Trone	UT B '19	Chemical Engineering	Record No. 1443
Timothy R. Udall	CA K '19	Mechanical Engineering	Forge No. 75
Victoria Van	AL Δ '19	Electrical and Computer Engineering	Record No. 1444
Charles Van De Mark	CO B '19	Electrical Engineering	Lyons No. 7
Wyatt Vandepol	KS Γ '19	Industrial Engineering	Record No. 1445
Joseph Wakim	MA Θ '19	Chemical Engineering	Stabile No. 668
Lirui Wang	WA A '20	Electrical Engineering	Forge No. 76
Megan L. Warteman	MI Z '19	Mechanical Engineering	Stabile No. 669
Nicholas J. Wawee IV	MI A '19	Chemical Engineering	Stabile No. 670
Alec D. Weinhold	OH N '19	Computer Engineering	Record No. 1446
Mallory N. Weininger	OH I '19	Civil Engineering	Record No. 1447
Hana E. Welsh	CA M '20	Mechanical Engineering	Forge No. 77
Simon T. Whiteman	CT A '19	Chemical Engineering	Stabile No. 671
Mariah M. Wickline	WV A '19	Biomedical Engineering	Record No. 1448
Karl W. Wieck	NH A '19	Chemical Engineering	Stabile No. 672
Jerrod A. Wigmore	SC B '19	Electrical Engineering	Lyons No. 8
Nicholas A. Wijaya	IA A '19	Aerospace Engineering	Ericsson No. 1
Bethany R. Wilburn	TX Θ '18	Mechanical Engineering	Record No. 1449
Benjamin D. Williams	CO A '19	Chemical and Biochemical Engineering	Record No. 1450
Brandon Williams	RI B '19	Biomedical Engineering	Stabile No. 673
Catherine J. Witt	CO B '19	Electrical Engineering	Lyons No. 9
Micha Won	IL Γ '18	Industrial Engineering	Stabile No. 674
Katharine E. Worcester	CA A '19	Civil Engineering	Forge No. 78
Stephen E. Wormald	OH N '19	Mechanical Engineering	Record No. 1451
Jenny Ailin Xiao	CT A '19	Mechanical Engineering	Stabile No. 675
Hiroshi C. Yanagida	TN Z '19	Engineering	Record No. 1452
Bilige Yang	PA K '19	Engineering	Stabile No. 676
Rose Yin	NY Δ '19	Chemical Engineering	Stabile No. 677
Luke E. Zanoni	IL Z '19	Civil Engineering	Stabile No. 678
Danielle Zebelean	UT A '19	Civil and Environmental Engineering	Scribner No. 47
Elizabeth J. Zudock	MN A '19	Chemical Engineering	Record No. 1453

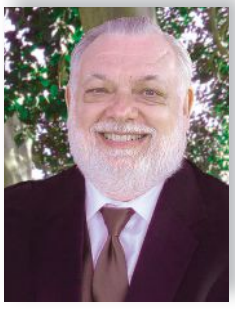
Tau Beta Pi Major Gifts Officer Sherry Jennings-King recently asked alumni to impart up to 100 words of advice for engineering student members. Here's what they said:

Engineering is in constant change. In 1947, the transistor was invented. Within 10 years, there were transistors on the market and it was necessary to incorporate them into designs. My studies with vacuum tubes was soon of little value. As you progress in your career, master new technologies as they appear. If you are fortunate enough to be located in a city with an engineering college, plan to take a class every year. Get involved in the technical societies of your area of interest. Subscribe to their publications and attend meetings and conferences. Become a Professional Engineer.

Arthur J. Beutler, *WI A '48*

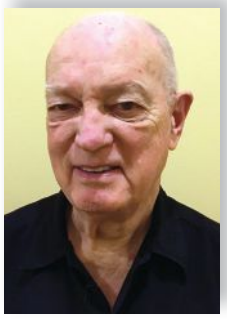
The paralysis of analysis is one of our greatest impedances, second only to a withdrawn personality. Always be ready for action, willing to stick your hand out to help or meet someone. Social capital has been the most valuable asset in my life. I started my first business one day as I walked by the small business development center at my local community college. A year later, with no indication, that was the one move that sustained my family during the recession. Lastly, every job I have had has been due to someone I had met before applying.

David J. Cowan Jr., *FL E '14*



Know which jobs will be off-shored or replaced by AI; radiologist MDs (reading x-rays, CTs, and MRIs) did not recognize this. Understand Choice Theory; William Glasser, MD (1925-2013); 23 books. Better understand yourself and others; it explains why-we-do-what-we-do. We always act to meet our five basic needs: survival, love & belonging, power, freedom, fun. Glasser was a chemical engineer before becoming a psychiatrist. (See: www.WGlasser.com Bio: William Glasser: Champion of Choice.) "Glasser had a mission to empower people through choice, free will, and self-determination." We do not multi-task; we quickly shift among levels of perception; Stations of the Mind.

Lester M. Holland, *IL A '66*

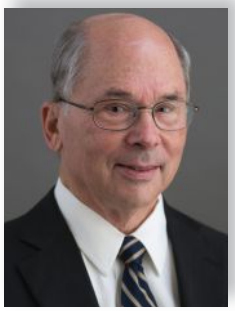


Set your moral compass to always do what's 'RIGHT' throughout your professional and personal life. "On my HONOUR as a Gentleman,..." was embedded while in the NROTC at Mr. Jefferson's University of Virginia. 'My Word is My Bond' became prominent during 4 U.S. Naval Academy years, 3 years at sea aboard ship, and thereafter. But, my primary asset became my reputation to always provide accurate assessments and appropriate recommendations for any/all situations, regardless of "political" ramifications or predetermined expected answers. This reputation resulted in numerous assignments well-beyond my pay-grade and an exciting and most satisfying career.

Carleton C. Hoffner Jr., P.E., *NY G '57*

Take care of yourself physically and emotionally and permit spontaneity in your life. Plan your finances and live within your means. Invest in strong and stable relationships. Develop likability, optimism, and patience. Instill self-esteem and enrich others' lives. Develop communication and listening skills. Work hard and be effective, not just efficient. Make planning a part of each day, paying attention to details, but don't strive for perfection. Focus on what is important and stay balanced. Help the underprivileged or those who have suffered discrimination. Develop assertiveness. Don't let fear prevent you from taking calculated risks.

Philip W. King III, *TN A '66*

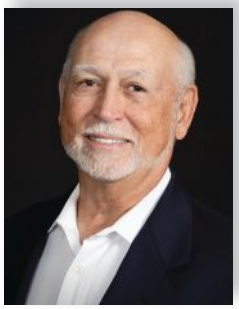


With a BS and MS in EE, and an ROTC Commission, the Army assigned me to lead a technical team that deployed the first satellite communications earth stations to Asia (Vietnam). I then led the deployment of Army SatCom systems to Europe and East Africa. That work led to a 35-year career at MIT Lincoln Laboratory, developing new technologies for the FAA including collision avoidance, GPS for air navigation, and other systems now deployed worldwide. My advice: Take advantage of new opportunities and don't be rushed to settle down. If they are fascinating, challenging, and beneficial, go for them!

Raymond R. LaFrey, *MI A '61*

Be open to opportunity! Life and career are a journey. You never know what possibilities and choices will come your way. The unexpected opportunity could be a game changer. Don't be afraid to take a risk and try something different than what you planned.

Josephine A. Lucey, *IN G '80*



If you plan to join a corporation, start broadening your educational foundation from pure technical to include finance and accounting. In order to "sell" your ideas to management, you'll need to know how to do this in financial as well as technical terms. I'm sure you'll have access to finance and accounting types to assist you, but some knowledge on your part will make it easier to convey your ideas to a broader audience. You may even set a goal to obtain an MBA at some point in your career – I did.

William F.H. Sinclair, *MS A '63*

2018 Alumni Giving Program May-July Contributors

The names of 1,720 Tau Beta Pi alumni who made donations to the Association in the 2018 Alumni Giving Program appear in two separate sections on the following pages. Their gifts totaling $315,830 arrived between May 1, and July 31, 2018.
Gifts received after July 31 do not appear here but will be published in the Winter 2019 issue of *The Bent.*

The generous support of each member is deeply appreciated by the Executive Council and other Association Officials. The financial resources have permitted strengthening our programs in several areas that emphasize the importance of Tau Beta Pi's basic objectives and that help all collegiate chapters and student members.

Recognition Club Donors are listed alphabetically within their chapters and appear in the first section below. Member-contributors appear in the subsequent section. Names marked with a † symbol are of deceased members in whose memory donations were made either by relatives and friends or through bequests. In addition to gifts acknowledged here, several were made anonymously through the Combined Federal Campaign and are also deeply appreciated.

Donor Recognition Clubs

The names of 1,436 Tau Bates appear in this first section. They made donations to the Alumni Giving Program between May 1, and July 31, 2018, AND they have also made CUMULATIVE contributions (in some cases including matching gifts) and bequests to Tau Beta Pi through the years totaling from $250 to more than $1,000,000.

The Donor Recognition Clubs are part of our effort to recognize a donor's total lifetime cumulative giving to Tau Beta Pi. Such continuous support significantly contributes to the overall strength of the Association and allows our Society, with confidence in our financial resources, to plan for modest growth in our services to the engineering profession. These clubs were chartered by the Executive Council in 1986 and have been set at the following levels:

Matthews Club	500,000	Alpha Club	25,000	Chi Club	1,000
Nagel Club	250,000	Beta Club	10,000	Second Century Club	500
Williams Club	100,000	Delta Club	5,000	Founder's Club	250
Heikes Club	50,000	Zeta Club	2,500		

HEIKES CLUB

IN Δ Koller, David Christ '62
LA A Longwell Jr., Harry J. '63
MS A Sinclair, William Fredrick Hall '63
OH E Korzep, Stanley '66

ALPHA CLUB

IA A Faidley, LeVern William '67
NY B Anonymous '80
OH Δ Robe, Richard '55
PA Δ Goldstein, Steven Saul '65
TX Γ Loewenstern Jr., Walter '59
WY A Schoenborn, Renee Margal '85

BETA CLUB

CA Γ Davies III, Paul Lewis '83
CA Z Grigsby, David A. '84
CO B Kayse, Kevin Stewart '78
IL A Ditman, Jason Blair '91
IL Γ Gross, Richard Charles '80
Rasmussen, Warren Willis '53
LA Γ Samuels, Katie '86
MI A Colbry, Dirk J. '06
Colbry, Katy Luchini '99
LaFrey, Raymond Richard '61
MT B Samuels, Blake Robert '84
NY B †Chatfield, Charles Foster '32
NY E Maniscalco, Thomas Louis '67
OH A Salamon Jr., Peter Francis '71
PA A Anonymous '90
SD A Gomulinski, Tricia Elizabeth '98
TN A Dodge, Franklin T. '60
Holmes, Sammy Sanner '78
TX A Adamo, Paul Magness '85
TX Γ Wilson, Richard Overall '56
TX H Trich, John Albert '70
VA B Hogan, James Campbell '70
WA B Moors, Donald Edward '55
WV A Baker, David Wesley '76
WV B Teti Jr., John J. '71

DELTA CLUB

AK A Gaddis, B. L. '73
CA Δ Duckworth, Jack E. '66
CA Z Fisher, Dean Lawrence '75
CA A Crews, Brian '70
CA Y Idenmill, Ethan Matthew '04
CO A Abell, Joe Markwell '56
FL A Anonymous '78
Vice, William Eugene '70
IA A Krambeck, Scott David '82
Slater, John B. '43
MA A Hamel, Peter J. '81
MA B Godrej, Adi B. '63
Poduska Sr., John William '59
MA Δ Peterson, John William '53
MI E Gomulinski, Curt D. '01
Hock, Roy Edward '51
MS A Benton, William Daniel '71
NJ A Post, Edwin Lewis '62
NY K Muller-Girard, Otto Theodore '52
OH A Ferencz, Robert Mark '80
Markuson, Donald Miner '80
OH B Forchione, Dennis Angelo '72
OH Γ Beans, Bill '53
OH E Pasadyn, Ronald Chester '70
PA B Williams, John Roger '60
PA A Schuler, Joseph J. '80
PR A Garcia, Carlos E. '77
TN A Cook, James Michael '72
TX A Wells, Roger Murray '71
TX Γ Jordan, Paul Joseph '90
TX E Sitton, Randal Warren '85
TX Z Wint, Stephen Peter '83
UT A Sadauskas, Leonard '66
VA B Friar, Billy Wade '58
WA A Asplin, Lyle Irving '59
Speece, Daymond Roy '54
WI A Beutler, Arthur Julius '48

ZETA CLUB

AL A Rowell, William Johnston '69
Talbot, Thomas Fletcher '52
Wilhelm, William Jean '58
AL Δ Styles, Ellen S. '85
Styles, Robert Charles '76
AK A Usibelli, Joseph Emil '59
AZ B Barnett, J. Matthew '90
CA A Fong, Kirby William '67
CA B Hammer, David A. '64
Lee, Roland Robert '75
CA Γ Fuller, Robert Osborne '51
Hillier, Frederick Stanton '58
Kwok, Munson Arthur '62
CA Δ Zehrbach, Bill Ernest '69
CA E Gaunt, Arnold John '86
CA H Burrows, Stanford '63
CA Λ Holl, Sue '76
Yung-Rubke, Belinda '80
CA P Kraft, Lyle David '87
CO A Hickman, Richard Leo '65
CO B Clair, David Richard '58
CT B Pitkin, Edward Thaddeus '52
DC Γ Cooper, Reid Franklin '77
FL A Passman, Alan Joseph '06
GA A Henderson, Richard Dean '53
IL A Robertson, John Allen '65
IN A McDonald, John Douglas '73
Murdock, Jay Homer '51
Novy, Robert Alan '85
Palas, Richard Francis '65
Weiss, Arthur Frank '55
IA A Davenport, Delbert James '67
IA B Lammers, Leon '59
Schwarting, Eugene R. '63
Smull, Warren Lindsey '57
KS A Meyer, Leslie D. '65
KY A Feather, Gary Alan '80
Gould, William Howard '61
LA A Larose, David Edward '73
Richardson, John Daniel '72
LA B Vaughan, Robin Marie '81
LA E Champagne Jr., Pierre '76
ME A Bragdon, Reginald Glenwood '93
MD B Ausherman, Donald Wayne '79
†Burdick, Martin Myrl '56
Powers, Kenneth Ryan '01
MA B Giaimo III, Edward Charles '74
McKim, Thomas Francis '75
Petrofsky, Alfred Martin '50
MA E Mahoney, John Joseph '56
MA Z Kelly, Thomas William '80
Poulin, James Edward '66
MI B Vojtech, Larry Joseph '69
MI Γ Holderness, James Henry '67
Johnson, Kalin Shaw '46
Karl, Donald Edward '71
Liepa, Mark Albert '81
Sarns, Richard Norman '76
MI Δ Culver, Walter '60
Dietrich, Robert William '57
Kogut, Kenneth Joseph '71
Rose, Jonathan Douglas '81
Wall, Raymond J. '50
Wittman, Bernard A. '64
MS A Faries Jr., Charles Edward '57
MO A Sandfort, Robert Melvin '64
MO Γ Saufnauer III, John '61
NJ B Carey, Mark '77
Rice, Darren Christopher '91
Rodgers, Douglas Noss '67
Sharkey, John Michael '84
NJ Γ Dehn, Rudolph Albert '41
Mozda, Stanley J M '69
Stadlin, Walter Olaf '52
NM A Bacastow, Jack L. '73
Smith, Jeffrey A. '84
NY A Kofman, Boris B. '86
NY B Kelley, David Benjamin '51
Leader, Jeffery James '85
Leader, Margaret E. '85
Newman, Michael '84
Wedlake, Raymond A. '73
NY Γ Gray, Robin Bryant '46
Luckett, Larry Wayne '83
Thal Jr., Herbert Ludwig '53
NY Δ Abel, John Fredrick '63
Randall, John Douglas '65
NY E Hellman, Martin Edward '66
NY H Pollack, Herbert William '50
NY Θ Foell, John Daniel '77
NY K Gaul, Michael Arthur '76
Moore, Duncan T. '69
NY Λ Kern, Peter Leonard '62
NY Ξ O'Keefe, Luke Francis '80
NY O Ribuffo, Michael Rocco '75
NC A Hall, Michael L. '83
Ma, Robert Ping-Chung '88
Vercaemert, Carol Starnes '76
NC Δ Jones, Luellen Barnett '83
OH A Case, Richard Paul '56
Whittington, John T. '93
OH Γ Ouellette, Andrew Louis '86
OH H Dechance, Richard Phillip '76
OH I Starr, Brian Frazier '87
OH M Kovacs II, William '74
OK A Blakeburn II, Dave Lowry '83
OR A Arsenault, Paula Marie '81
Milton, Stuart W. '84
PA A Lybas, John M. '70
Weber Jr., John Herbert '63
PA B Anderson, Charles Alfred '57
Beecher, Gregory A. '78
Smyth, John '61
Sterner, George Rudolph '62
PA Γ Wisman, Craig Burton '75
PA Z Dieter Jr., George Ellwood '50
PA Θ Castellan, Susan Marie '84
RI A Vascellaro, Jerome Charles '74
RI B Dusablon, Louise Victoria '64
Luz, James J. '80
TN Δ Knight, Joseph Brent '93
TN E Smith, Craig '80
TX A Dorr, Lawrence Daniel '68
Tran, Tan Dai '87
TX B Carey, Martha Derden '80
Glenn, Stephen W. '66
TX Γ Capshaw, David M. '80
TX Δ Cloud, Eugene Harrington '67
Strait, William Lewis '49
TX H Brown, Ian William '73
Fairchild, Jack Elmer '53
VT B Salazar, Marcos Edward '82
Urciuoli, Joseph Charles '68
VA A Wadsworth, Robert Manning '82
VA B Lovell, Lale G. '96
Lovell, Matthew B. '96
WA A Walker, James Rodney '55
WV A LeMasters, Jerry Ray '63
Rockenstein, Richard C. '63
WV B Ashman, Michael D. '84
Payne, Michael E. '81
WI A Derusha, James Ronald '55
Forkner, Stacey L. '96
WI B Whittington, Laura Lee '88

CHI CLUB

AL A Glover, Martin Cochran '70
Goodwin, James Joseph '58
Phinney Jr., Thomas Wesley '66
Slotkin, Arthur Lewis '68
Whitley III, Howard Grady '63
AL B Andrzejewski, Joseph R. '90
Bell III, Willis Vincent '78
Helms, Robert Knight '61
Moore, Robert Avery '54
AL Γ Braden, James Michael '76
AK A Keiser, Jan Ann '76
AZ A Acorn, William Raymond '71
Bell, Edward Anthony '72
Berg, Jeffrey Roy '93
Davis, Robert Allen '79
Redfern, Julie Jacks '83
AZ B Kersten, Robert Donavon '49
Latta, David Raymond '89
Millson Jr., Chris '63
CA A Gilbert, Paul Hammond '59
Magyary, Andrew '65
Van Dyke, Korbin S. '80
CA Γ Roodhouse, James Greenlee '59
Taniguchi, Brian Yoshito '77
CA Δ Moretti Jr., Vincent Carlos '78
Roof Sr., Dwight Ellis '57
Zaatari, Mohammed Omar '88
CA E Bramblett, George Clinton '59
Evtuhov, Viktor '56
Gritton, Eugene Charles '63
Hardy, Frederick Walter '65
Schurr, Hermann Dieter '82
Schurr, Juliet N. '82
CA Z Jacobberger, Donald Hubert '58
Vlahutin, Paul Andrew '65
CA H Zanini, David Victor '90
CA Θ Anonymous '84
Slater, Eric Kent '67
CA I Kuspa, Joseph Anthony '93
CA K Scanlan, Lawrence Allen '68
CA N Armstrong, Lorrie A. '84
Armstrong, Robert Allan '81
Chew, James S B '84
Mayer, Robert James '85
Vandegriff, Don G. '67
CA P Hoffmann, Kevin Von '80
CO A Grandey, Gerald Wayne '68
Peters, Richard Duane '80
Rense, John A. L. '74
Schneider, Randolph Paul '71
CO B Farmer, Brian Keith '78
Guss, William Charles '68
Herhold, Mark Kenneth '80
Luppens, John Christian '76
Solomon, David '49
CO Γ Lee, Don Evard '59
CT A Baublitz, John Eberhart '60
Bennett, Beth Anne '91
Kaufman, Earle Bertram '42
Kucera, Daniel Jerome '61
Merritt, Richard George '50
Saubestre, Paul Andre '79
CT B Devin, Maurice Roger '73

Douglass, Michael Richard '79
Leib, David Bernard '61
Zajac, Gerald Edward '68
DE A Buehler, John Henry '68
DC A Gillam IV, Isaac Thomas '53
DC B King, David Alan '68
Murphy, Joseph A. '60
Roberts, Carol Ann '63
Roberts, John Paul '62
DC Γ Mitchell, Reginald Stuart '65
FL A Bowles Jr., Carl Houston '54
Burkart, Scott Lawrence '78
Furman Jr., Thomas deS. '66
Mennes, C. Martin '68
Woodward, Michael Boyd '85
FL B Sipes, Alesia Jones-Parra '84
FL Γ Ball, Arthur Morley '70
Giovannelli, Ronald Frank '76
Preslar, Daniel Alton '91
FL Θ Burrow, Gregg Dunkin '11
GA A Barber, Brian Robert '81
Brush, Gary Stoddard '80
DeLoach Jr., Thomas Clifton '69
Taylor, Hubbard Harvey '75
Wetenhall, Paul David '73
Zimmerman, Clarence David '65
ID A Peters, Daniel J. '80
IL A Daughters, Timothy Edward '81
Hines, John William '56
Jones, Douglas Warren '80
Kasper, Frank Stanley '52
Le Blond, Peter Carl '75
Saltzman, Jay Adam '90
Schilson, Robert Earl '50
Tatara, Richard Michael '78
IL B Lorentz, Peter Michael '89
IL Γ Henry, Thomas Peter '73
Pineault, Wayne '79
Schwartzbard, David Leigh '91
IN A Amaya, Mark Anthony '85
Blakeslee, Donald Jack '51
Cripe, Duane Byron '82
Easto, William D. '79
Hendryx, Kevin S. '81
Herendeen, Robert Oliver '65
Johnson, David Harley '63
Lambert, Ralph Edward '68
Rathbone, Donald E. '51
Shaffer, Gerald Harley '74
Tirio, Mark Charles '73
Tveter, Steven Elliot '74
Weaver, S. David '59
White, Stanley Archibald '57
Wright, Ronald Robert '71
IN B Rosenbarger, Donald Glenn '78
IN Γ Farrow, Michelle Dorice '83
Murray, Francis O'Brien '68
IN Δ Hartman, Richard Carl '63
Vocke, Merlyn Clarence '55
IN E Finley, David Roland '94
Tyler, Thomas Lee '54
IA A Ellingrod, William Wayne '54
Morse, David Sanford '52
Puffett, George E. '83
Sellew, Roger Franklin '59
Sutherland, Keith Allan '69
Wallace, Jean Ellen '81
Walter, Gordon Escher '41
IA B Corrao, Debbie G. '93
Warner, Diana Hix '73
KS A Heiny, Richard Lloyd '50
Remsberg, James Carleton '57
KS B Hockett, James Keith '66
KS Γ Dunbar, Monica Ann '91
Lebak, James Michael '89
KY A Halloran, Stephen Richard '75
KY B Minsterl, James R. '71
Yee, Ngai Sandy '82
LA A Schexnayder Jr., Isby Louis '63
LA B Metcalf, Richard Thomas '78
Paul Jr., Howard Cochran '80
LA Γ Hulett, Rachel Anne '07
LA Δ Halkiades, George '63
ME A Havey, Mark Douglas '73
Ouellette, Alfred David '76
MD A Chan, Louis A. '84
DiGiorgio, Joseph Brun '54
Hart, Edwin Flessner '68
Lang, John Charles '72
Zehner, James Warren '80
MD B Mentzer Jr., William Richard '61
Roberts, Carla '82
MA A Achilles, Heather Dale '83
De Andrea, Paul John '75
Downs, Allen Gybbon '75
Fenner, Peter Richards '64
Lancey, Roderic Charles '51
Oakes, Michael Willard '77
MA B Balazs, Phillip Terry '69
Butkus, Lawrence Michael '85
Charpie, David Wayne '82
Ferguson, Keith McDowell '62
Koehler Jr., Richard F. '67
Kornafel, Peter Robert '65
Patterson, John Bryan '68
Simpson, Richard Allan '67
Spradlin, Louis Woodson '57
Viterbi, Andrew James '57
MA Δ Buffinton, Keith William '79
Curtis, Jonathan Greely '69
Savage, Paul David '77
Simon, Henry John '60
MA E La Lone, James Caryle '70
Ridlon, Stephen Allan '66
MA Z Philbrook, T. Varnum '73
Rainville, Robert Francis '68
MA H Duda, James A. '84
MA Θ Chapman, David Mason '83
Gregg, John Edward '84
MI A Beimers, Charles John '69
Kupfer, Michael David '83
Mueller, James Michael '70
MI B Dejonge, Michael Kent '65
Edquist, Carl F. '77
Groeneveld, Gerald Anthony '63
Newman, Frederick Alan '83
Saccany, Richard Joseph '71
MI Γ Campbell, John Alexander '62
Connable, Tenho Sihvonen '42
Gentry Jr., Denton Eugene '92
Guttman, Richard Theodore '60
Holmes, John William '65
Iler, Gerald Walter '49
Macika, Raymond Edward '86
Nobunaga, Brian N. '83
Roof, Richard Rundel '51
Sheets, Alan '81
Stinchcombe, James D. '49
Washburn, John Robert '69
Zechel, Gary Michael '62
MI Z Cookman, Jordan Christopher '94
Tarricone, Louis Guy '82
MI H Czupinski, Glenn Walter '83
MI Θ Spall, James Charles '79
MN A Avery, Carlos Preston '61
Clarke, Richard William '53
Loughlin, James Paul '85
MS A Dixon, Charles James '56
Hodge, B. Keith '65
McKay Jr., Frank Fay '60
Williams, Michael Lawrence '80
MO A Burkholder, Scott Graham '79
Hea, James Peter '68
Kehoe, Martin James '72
MO B Frankenberger, Richard Brett '93
Patterson, Michael A. '77
Schwent, Dale Gerard '84
MO Γ Chambers, David Hugh '80
Diboll Jr., Wallace B. '44
Goldring, Stanley '64
Levy, Donald Jack '47
MT A Erickson, Peter Benjamin '56
Anonymous '72
NE A Cowling, Edgar Charles '75
Patterson, Roger Kent '73
Sneed, Kathryn K. '80
NV A Wigchert, Albert Henry '74
NH A †Hildreth, Howard Russell '56
NJ A Brechka, Thomas Michael '73
Compton, Joanne B. '79
Greenip Jr., John Francis '66
Turgyan, Terrence Joseph '75
Waricka, Peter Thomas '71
NJ B Colarusso Jr., Remo John '83
McCord, William Fred '64
NJ Γ Fenster, Saul K. '53
Gittes, Marvin Steven '63
Otterbein, Richard Charles '71
Sharon, Anthony Peter '74
Zozzaro, John Lawrence '64
Zygo, John Peter '70
NJ Δ Kline, Donald R. '55
NM A Bradt, David Jay '81
Peace, Jeffrey Howard '76
NM B Sullivan, Thomas Daniel '74
NM Γ Bakkom, Erik Iver '97
Bonjorni, Daniel Louis '90
NY A Croll, John W. '12
NY B Roberts, S. William '58
Zastrow, Kenneth Donald '52
NY Γ Butler, Charles William '50
Huie, Joseph Albert '52
Mucher, Craig Allen '82
Pennisi, Joseph Michael '89
Weader II, Richard Jerome '64
Zadoks, Abraham Louis '57
NY Δ Kuehne, Donald L. '73
Reynolds, David Allen '71
Schilke, Neil Arthur '63
Van Arsdale, George Davis '62
NY E Siegel, Murray Harvey '63
NY Z Chu, Lawrence Joseph '71
Tartanian, Charles Noubar '58
NY H Kaplan, Howard Ronald '55
Kushel, Glenn Elliot '68
Pasquarelli, Louis Ralph '73
Wu, Randall '75
NY I Cassella, Judith Ann '71
NY K Coleman, Thomas G. '62
Dennis, William John '74
Peters, Kenneth Jerome '87
NY Λ Petsche, Frank '78
NY N Notaro, Frank '57
Riebling, Robert William '60
Roach, Linda J. '82
NY Π Brol, Michael Walter '83
Kaemmerlen III, John T. '76
NY P Abreo, Leslie Anthony '97
NY T Olenik, Anthony Michael '08
NC A Minday, Richard Michael '66
Quillian, Ann Massey '85
Shelton, Monty Lee '84
Weirs, Gregory '91
Yohman, Donald Forest '73
NC Γ Everett, Robert Rivers '42
Jackson, James Roy '69
NC Δ Gaither, Allen Wayne '96
OH A Goralski, Christian Thomas '64
Hamilton, Joshua J. '09
Roder, Paul William '83
OH B Buynacek, Edward John '57
Thompson Jr., John Russell '60
OH Γ Carr, Stephen J. '70
Clum, James Avery '60
Feltz, John Francis '61
Morscher, Mark James '89
Orkins, James E. '66
Overmyer, Ray Arthur '73
Schroeder, Michael Alex '95
OH Δ Kurzen, Mark R. '71
Nussbaum, Lael Edward '68
OH Z Babula, Maria '89
Busbey, Bruce C. '84
Panning, Daniel Wayne '79
OH H Cole, Neil Richard '75
Kelso, Thomas Sean '88
Sweder, James '82
OH I Brinkman, Donald John '87
OH K Maki, Luke Richard '78
OH Λ Eckhardt, Andrew James '79
Gwin, Russel Willis '85
Rohr, Timothy Paul '80
OK A Carnes Jr., Albert Cowser '56
Dunn Jr., Robert Ovington '82
Norris, Thomas Gilbert '56
Vondersmith Jr., William M. '68
OK B Perrault Jr., John Edward '75
OK Γ Diggs, Robert Allen '74
Sneed Jr., Elbert Lee '79
OR A Buxton, Charles Edward '62
Davis, Donald Arthur '51
Sigworth Jr., Harrison W. '68
PA A Arrowsmith, Donald L. '65
Bradley, Gordon Hoover '62
Edwards, Gilbert Spencer '67
Goldsborough, John Paul '56
Granville Jr., Richard W. '55
Hughes, Michael Rice '87
Ortlieb, John Richard '53
Ring, Robert Brex '55
PA B Bradt, Andrea '76
Overbaugh, Thomas Michael '83
PA G Cavalier III, Forrest J. '89
Cavalier, Nina Leslie '89
Husak, Alan David '65
Kuhr, Tina Michelle '81
PA Δ Black, David L. '83
Hoffer, Norman K A '81
PA E Hagadorn, Hubert William '59
Hermann, Frank Valentine '59
Krein, Philip T. '78
Nolan, Christopher William '86
Stratton, Carl William '81
PA Z Chatman, William Charles '52
Ebner, Alan Martin '61
Mergel, Joseph John '72
Silvasi, John J. '70
Struckman, Russell William '64
PA H Ellis Jr., Ira Thomas '56
Keil, Alan James '72
McDonnell, Robert William '48
Price, Russell William '72
PA Θ Woods Jr., Howard James '77
PA I Schoenberger, Lewis Robert '84
PA Λ Taylor, Thomas Ray '73
PR A Hilerio Sanchez, Josuan '07
RI A Kenney Jr., Joseph '50
RI B Hurdis, David Albert '62
Lamoureux, Suzanne May '82
Lieberman, James '67
Verrier, Donald Charles '54
Withrow, Gregory Lucian '80
SC A Brown, David A. '66
Peters, William J. '70
Rast Jr., Heber Edward '63
SC B Massey, Kristina Logue '71
Wilson, Samuel Scott '91
SC Γ Cochrane, Jerry Wilson '55
Fletcher, Robert Hough '64
Marbois, Matthew Clark '81
Wertheim, Robert Halley '45
SD A Brass, Lorin Lee '75
Jenkins, Creties David '83
McCourtie, Bonnie Rae '80
Shoup, Heather Zarie '95
SD B Johnson, Dean Hilbert '81
TN A Hunt, Roy Joe '67
Moore, Robert Monroe '66
Mynatt Jr., Roy Leon '58
Sharp, Jason Wayne '02
Tomlinson, Edward Thomas '72
TN B Brown, Kevin George '85
Burnett Jr., Wilton Wright '67
Kepper III, James Henry '71
Pulley, Debra Domino '78
TN Γ Adams, John Anthony '63
Dooley, Joseph Brooks '70
Perkins, William Samuel '54
TX A Henry, Wesley Bert '51
Lancaster, David Carrington '61
Reese, Francis Edward '75
Smith, Daniel Robert '75
TX B Johnson, Mark Sheldon '74
Nall, Albert Arnold '81
TX Γ Altman, Thomas Clark '70
Cox, Bill E. '76
Horn, Kenneth Porter '61
Money, Lloyd Jean '42
TX Δ Dokos, Nick George '57
Garner, Scott Jahrand '77
Mason Jr., John Michael '81
Muldrow, Grady Montgomery '89
Pickett, Dennis G. '72
Porter Jr., James Walter '51
Pulley, Paul Winfred '87
Richards, Tamela L. '81
†Roberts, Warren Hugo '58
Simpson, Stancy Jean '79
Smith, Manning DeWitt '64
Wilson Jr., Edmon Doak '57
Woram, Brian James A. '81
TX E Bailey, Robert Richard '70
Valka, William Allen '75
TX Z McCaleb, Jesse Earl '64
TX H Godwin, Albert Eugene '84
TX Θ Putnam, Judd Lee '73
Quesada, Paul '72
Van Landingham, David J.'74
TX Λ Garcia, Danny '85
Hinojosa, Juan Jose '84
Magee, Dan Albert '66
Rosenwald Jr., John Andrew '88
VT A Sheldon-Dean, James P. '79
VA A Price, Michael Glendon '74
Reeside Jr., William Oliver '77
Tietjen, Jill S. '76
VA B Hanley, Thomas Richard '67
Hyduke, Robert Alan '74
Powell, James Davis '77
Snidow III, Lyle Christian '74
VA Δ Brenner, Joseph R. '55
WA A Eastman, James Scoville '53
Ogg, Daniel Grant '85
Reichel, Jerel Dave '66
Stiegler, Joseph Edward '58
Volkirch, Terence John '84
WA B Bowers, Jack W. '80
Ray, Edworth Lillard '48
Scott, Norman Ray '58
WV A Boggs, Mark Steven '80
Campbell, Donald Franklin '78
Skujins, Ojars '68
Skujins, Margaret S. '69
WV B Saultz, James Edward '50
WI A Cattoi, Robert Louis '50
Johnson, Joseph William '79
Knoke, Calvin Arthur '45
Martell, Donald Louis '60
Wolff, James F. '59
WI B Delgado, José Manuel '69
Derra, Kenneth William '90
Graef, Luther William '52
Jaye, Deborah Ann '03
Murawski, Steven Lee '80
Pickett, Mark Allan '72
WI E Hubmann, Martin Thomas '13

SECOND CENTURY CLUB

AL A Miller III, Edwin H. '84
Singley, John Charles '73
AL B Sims, Kenneth Lewis '71
AZ A Shaver, Frederick William '55
AR A Moody, Charles Roger '58
Perciful, Jerry Cecil '60
CA A Gourdin, William H. '72
Hall, Robert M. '70
CA B Hearn, David Russell '64
CA Γ Austin, Lyman Douglas '61
Ma, Conlan Liang '99
CA Δ Bovich, Emil Joseph '57
Griffith, Glen Arthur '72
Hamilton III, Edsel Poston '72
Iwai, Derek Torio '80
Yamashiro, Keith Kotsu '79
CA E Axt, Robert Donald '66
Bienstock, Bernard Joel '68
Parker, Paul Warren '62
Tamanaha, Howard S. '77
CA Z McGuire, John Patrick '58
CA H Holstead, Raymond H. '71
Khalili, Azita M. '83
CA Θ Ward, Michael Lynn '67
CA I Dovala, Richard John '71
CA K Taylor, Robert Derek '82
CA Λ Reynolds, Hugh McGinnis '69
Smith, Robert Press '75
CA M Empey, Daniel Martin '82
CA N Bales, Deborah O. '77
Newberry, Conrad Floyde '57
Rheinhardt, Brian J. '83
Shatila, Mak H. '02
CA Ξ Bloomer II, Thomas Wayne '99
Fowler, David Michael '92
CA P Koehn, Calden R. '81
Koehn, Lisa Renee '82
Mandrell, Nathan Keith '92
CA Y Landis, George Foster '88
CO A Gibbs, Julie Forrest '80
Wilson, Donald Earle '58
CO B Brueck, Robert Lewis '59
Erickson II, Thurston G. '74
Joselyn, Jo Ann '65
Potochnik, Frank Stanley '50
CO Γ Weese, John Augustus '55
CO Z Bridges Jr., Roy Dubard '65
CT A Cooper, Richard Craig '63
Gerson, Gordon '58
Hoffmann, William Hurlock '50
Montermoso, Juan P. '69
CT B Brenna, Patricia Mary '81
Dzielenski, Edward Casmir '66
McKinstry, Robert J. '72
White, William Richard '65
DE A Keyser, Kevin Justin '88
DC A Amisial, Wilfrid Jean '71
DC B Raley, Charles Christopher '83
DC Γ Lintner, William Anton '82
FL A Charlton, John Dunaway '72
Digby, Thomas Graham '62
Glass, John Dorrance '73
Gunter, Alan Dale '79
Hines, John Stanley '63
Ireland, Ronald Joe '61

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Special Gifts

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Militello, Sam '61
O'Brien, Michael P. '88
FL E Hansen, Christian Michael '88
FL Z Delaurentis, Daniel Andrew '92
GA A Batts, Jiles Larry '48
Ham, John Michael '80
Hedrick, A. Fred '69
Priest, Anthony James '88
Schreiber, Don Clifford '91
Smith, Stanley Cooper '56
IL A Angus, Richard Myers '57
Benzinger, Leonora Ann '86
Chen, Anna '15
Drozt, Jennifer Lee '92
Loos, James E. '51
Rosenthal, Mark Alan '81
Thompson, Marshall Ray '60
IL Γ Asbury, Michael George '83
Christopher, James Mosko '84
Dorn, James David '54
Irish, Eugene Kelley '61
Kazmar, Richard Charles '71
Quint, James P. '66
Wong, Thomas T. Y. '80
IL D †Gilles, James Edward '75
IN A Carpenter, Richard Hatton '54
Chambers, W. Craig '68
Clodfelter, Donald Glen '55
De Poy, Phil Eugene '57
Hockema, Richard Wayne '68
Kelly, Paul Donald '59
Lane, David Girdon '71
Lodal, Peter Nelson '76
Minniti Jr., Robert Joseph '70
Sheets, Dennis Neal '67
Simnick, James John '74
Truax, Philip Park '54
IN B Galler, Stephen F. '05
Marum, Steven Edward '73
Pauls, Jeffrey Dale '79
IN Γ Stanchina, William Eugene '71
IN Δ Moll, Harold Elmer '59
IN E Ali, Afzal '78
IA A Brunk, James Everling '48
Burnet, George '48
Hemken, Peter Charles '77
Hicks, Roger Dale '57
Houston, Melissa Kay '95
IA B Hunstad, Norman Alan '49
KS A Burkes, Robert Thomas '71
Hayman, Layton Wayne '59
Hinton, Robert Allan '61
Lovitch, Dinah '88
Neff, Cassandra J. '82
Taylor, James Theodore '52
KS B Barkell Jr., James Warren '74
Stuever, Robert Allan '87
KS Γ Drumm, Robin Dale '79
KY A Cook, Robert Henry '74
Freeman, Richard Edwin '73
Patton, Bradley Davison '76
Shelton, Glenn Brandon '59
KY B Johnson, Alan Arthur '52
Leep, Herman R. '63
Schuler, Walter L. '60
LA A Lam, Chi-Kwong '66
McNulty, Whitney Patrick '85
LA B Boyle Jr., William Milnor '62
Marin, Justo Enrique '79
ME A Carsley, Denice Loring '92
Sproul, Otis Jennings '52
MD A Burroughs, Matthew O. '63
Wallace III, William Edward '86
MD B Deschere, David Stewart '82
Richman, Howard Ross '91
Roberts, Victor David '64
Wahl, Bill Floyd '82
White, Anthony Albert '95
MA A Haringa, Glenn E. '74
Paul, Bruce Franklin '56
Petersen Jr., Donald Winfield '66
Rotelli, Maryanne Camille '88
MA B Colavita, Michael Mark '81
Delagrange, Arthur Daniel '62
Honigsberg, Charles Alan '52
Manganaro, James Lawrence '61
Morin, Gene Douglas '58
Piness Jr., George '49
Thaller, David Ben '93
MA Δ Anderson, Thomas Thomas '57
Benedict, Kurt Gottfried '59
Cashman, William Francis '64
Ingalls, David Peabody '51
Serencha, Mark John '93
Weigand, Christopher Dirk '77
Wren Jr., Paul Ingraham '57
MA E Chiodo, Richard Anthony '71
Ethier, Francis Alfred '68
Johnson, David Norman '77
Loto, Thomas Anthony '93
Morse, Douglas H. '84
Schetzen, Martin '51
Sciartelli, Anthony Paul '86
MA Z Beliveau, Thomas Joseph '69
Cramer, Robert Alan '80
Fiejdasz, Paul Andrew '85
Steenstra, Curtis William '88
Stumpf, Christian Reeve '82
Vivaldi, Isadore Louis '52
MA H Daniels, Susan Carol '81
Garde, Sharon Ilene '86
MA Θ Burns, Nancy E. '84
MI A Cubitt, E. Duane '62
Patterson, Garvin Wesley '69
Woodruff, Paul Harrison '59
MI B Knutilla, Robert Lloyd '51
Kranz, Paul Richard '63
Stamm, John Andrews '61
MI Γ Bigelow, Wilbur Charles '44
Bull, Joseph Saples '52
Chick, Kenneth Martin '91
Davis, Robert Allan '81
Dieck, Donald Henry '65
Eichhorn, Jacob '46
Fox, Michael Thomas '73
Gerdes, Walter '58
Goodenough, Richard Duane '74
Hannig, William A. '47
Lempke, James Donald '83
Mohsberg III, Sidney A. '71
Pulley, Craig Martin '78
Sagaser, Donald D. '48
MI Δ Renauer, Joseph Gerard '74
Wojciechowski, Matthew P. '71
MI E Capraro, Michael A. '70
Cleary, Gary Kenneth '71
MI Z Erickson, Adam Alexander '88
Kowalik Jr., John '72
MI I Kantrow, Maryann '88
MN A Adrian, Ronald John '68
Lucking, Rachel Mary '85
MS A Carman Jr., Jack Baker '62
Johnson, Rodger Lee '71
MS B Bruchman, Mark '79
Gray, James Michael '88
MO A Adams, Charles Ray '65
Kuehnel, Charles George '62
Miller, Raymond Bryant '53
MO B Crafton, James Warren '65
Hall, Johnnie Everett '59
Myers, Kenneth Raymond '72
Steinman, Rebecca Lee '96
Wussler, Alfred Julius '71
MO Γ Eddy, James Dale '80
MT A Kujawa, Stephan T. '73
MT B Erickson, Elizabeth Jeffery '93
Jackson, Darron Boyd '86
Montgomery III, Wayne W. '83
NE A Shanmugam, Alagappan '83
NV A Davis, Adrianne Marie '98
NJ A Barrese, Anthony Louis '70
Carucci, Vincent Anthony '69
Denzer Jr., George Charles '61
Dudis, Joseph '64
Rhyner, Frederick C. '75
Wolf, Joseph Allen '55
NJ B Adams, Frank George '53
Regazzi, John Robert '76
NJ Γ Morgan, Dennis Ross '68
Paone, Charles Joseph '66
NJ Δ Chen, Ephraim Jonathan '09
Gross, Gary Robert '80
Potts, Richard Gardner '64
Whitesides Jr., Lawson E. '68
Wise, Frank W. '80
NY A Chaudhry, Sohail S. '74
NY B Glaser, Anthony Joseph '51
Holt, Ralph Ephraim '50
Lavery, Warren Thomas '67
NY Γ Diefenbacher, Robert Henry '59
Dupier, Dennis George '61
Greaves, Charles Joseph '60
Jordan, William Eugene '64
Levy, Michael David '89
McKersie, Alan David '52
Place, Harry George '51
Schoen, Edward Alan '69
Veldman, John Peter '70
NY Δ Benedek, Roy '66
Brown, Matthew Alan '85
Funke, Richard Harrison '71
Law, John Singwai '79
Logan, Joseph Skinner '56
Surovy, Randall J. '78
NY E Hoffmann, Donald Henry '62
Lather, Frederick Daniel '66
Ueber, Russell Charles '61
NY H Brose, Richard Frederick '63
Del Mazo, Jorge R. '69
Kern, Frank John '70
Prager, Jay Martin '68
Welk, William '79
NY Θ Baldwin, Alan Richard '70
Bunker, Wayne Albert '82
Godlove, Katie Ann '02
Hamm, Jeffrey H. '74
Newman, Mitchell James '81
Randall, Paul William '92
NY I Liberatore, Federico '85
Philogene, Kenneth '81
NY K Martens, Hinrich Robert '57
NY M Check, Frank Thomas '66
Hurewitz, David Lewis '64
NY N Frick, James A. '83
Nuding, Theodore Glenn '75
Uhl, Thomas John '84
NY Ξ Glynn, Sean Francis '97
Perrotta, Thomas '82
NY O Jankowski, Cecelia '81
Spitz, Glenn Steven '87
NY Π Hoelscher, James Roy '71
NY P Lubrano, Michael '80
NY T Venable, Richard Robert '95
NC A Cutchin IV, James McKenney '62
Neely, Clyde Caldwell '51
Noble, Robert Theodore '69
Stevenson, John Scott '76
NC Γ Maxson, Robert Jay '62
ND A Engbrecht, James Richard '59
Rieder, William G. '56
Seppanen, John Louis '86
ND B Jesh, Mark Steven '86
OH A Cassidy, Robert Blair '94
Koch, Carl Conrad '59
OH B Avellano, Michael Anthony '85
Cook, Kenneth Foster '74
Mayer, Robert Lawrence '69
OH Γ Scherocman, James A. '65
Stambolis, James Nicholas '70
OH E Egger, Robert Allen '85
Gruszka, William '75
Kuczmarski, Maria Ann '84
Lemmers, Robert E. '82
Ross Sr., David Edward '73
OH Z Rober, Kenneth Jerome '68
OH H Duvall, David John '88
Jumper Jr., George Yount '66
Merkle, Laurence Douglas '92
Miller, William Gilbert '83
Niemeyer, Joseph Bernard '85
OH Θ Burkardt, Leo Arthur '67
Sero, Raymond James '67
Walsh, Michael Anthony '75
OH I Muskoff, Terry Edward '67
Nelson, Lori Rae W. '84
OH K Brattoli, Mark A. '79
OK A Duke, Chris '83
Wolf, Jerald Michael '88
OK B Hand, Ronald Wayne '72
Strattan, Robert Dean '58
PA A Jones, Donald Paul '65
Kuebler, Gerard Philip '59
Pondo, Fredric '75
Shah, Minesh Ashok '90
Tomkiel, Stanley Anthony '72
Wismer, David Arthur '59
PA B Cashdollar, Barron Hamilton '57
Crecraft, Harold Edward '60
Mathason, Brian Keith '92
Naffin, Richard Keith '06
Ripsom, George Anthony '60
Smith, Randy Earl '84
PA Γ Bolser, William Charles '69
Chang, Yue Cathy '00
Chong, Jike '01
De Paul, Louis Anthony '73
Sack, John Stuart '75
PA Δ Berger, Bruce Sutton '54
PA E Batdorf, Harold Ansel '70
Dadey, Kathleen Ann '81
Flynn, Susan Mary '79
Guest, Frederick Charles '59
PA Z Citron, Paul '69
Fox, Ronald Norwood '69
Georges, George C. '63
Hunt, Thomas Robert '84
Marks, Maury Ivan '57
Thomas, Jeffrey R. '65
PA H Fruci, Natale Andrew '55
Noble, John William '72
Russell, J. Frank '74
PA Θ Barron, William Robert '60
PA I Haigh, Bruce Whittemore '71
PA K Ellis, Raymond Henry '64
PA Λ Francisco, Amy Denise '99
Mozelewski, Stephen Francis '86
PR A Rivera, Fernando Osvaldo '68
RI A Biddle, Justin Miller '56
Edgar, Richard Baxter '47
Townsend, James Courtland '60
RI B Burger, Laurie A. '76
Cheever, Paul Richard '52
Post Jr., Arthur Holder '57
SC A Exley Sr., Slade Forrest '72
Wilson, Rick Lane '81
SC B Fripp, Archibold Linley '66
Rippy, Crystal D. '93
Van Zee, John William '75
SC Γ Wysockey, Thomas John '53
SD A Eidsness, Karen Rose '83
Stieha, John Kevin '80
SD B Packard, Douglas Randall '64
TN A Brewington Jr., Percy '54
Cashion, Gregory Lee '79
Lundy, Ted Sadler '54
Masengill, Kimberly Lynn '88
Scott, Bobby Glenn '59
Valk, Anthony '86
Wheatley, Hubert Carl '70
Zimmerman, James L. '58
TN B Macchio, Gregory John '84
Miller, Charles Alan '99
Morton, Wayne King '63
TN Γ Moyers, Robert Lewis '05
TX A Krieg, Raymond David '60
Loring, Mark Phillip '87
Seaman, George Cook '66
Wong, Lucas '84
TX B Albritton, Patrick Michael '96
Easterday, Mark Louis '84
Fulton, William David '80
Houston, Scott L. '96
Moss, Michael William '83
Valusek, John Robert '70
TX Δ Barksdale, Donald Lee '55
Boutte, Jennifer Lynne '89
Chevalier, Mark Timothy '91
Dyson, Norman Kenneth '60
Hartman, Daniel Bruce '78
Johnson, Vance Clay '78
Kramm, Robert C. '81
McClellan III, W. Roy '74
McGinnis, Charles Irving '49
Murthy, Prahlad N. '92
Nolen, Kenneth Bernard '57
Perkins, Thomas Keeble '52
Scott Jr., Charles M. '53
Sullivan Jr., Samuel Lane '57
Thomas, Daniel P. '02
Tipton, Dewey Ross '64
Whitney, Herbert Ward '57
TX E Damoff, Howard Anthony '84
Ryan III, James Joseph '70
TX H Hall, Gary Dale '84
Johnson, Richard Leon '63
Reid, Thomas Anthony '65
Tepper, John C. '82
TX I Harris, E. Douglas '83
TX K Umrigar, Dara Nariman '88
UT A Dommasch, Alex '90
UT Γ Esplin, Robert Barton '04
VT A Bouchard, Donald Raoul '81
VA A Barnes, Lowell Paige '67
Dye, Michael Loren '87
Mac Glashan, Donald Welton '57
McNair, Grayson Eugene '62
Shirley, David Eugene '65
VA B Boward, Jill Kathleen '87
Haight, Roger Quentin '82
Maloney, Melissa Marie '90
Tacey, Charles Frederick '75
Thiel, Stephen Ward '81
WA A Perrault, William Richard '59
WA B Owens, William Leo '53
Small, James McCarthy '52
Williams, Harvey Ray '59
WV B Janeshek, Anthony Martin '74
WI A Berndt, Martin M. '56
Flakas, Gerald Kenneth '66
Horn, Robert William '68
Johnson, Brian Keith '87
Oliver, Floyd Forrest '60
Pristelski, James Stanley '66
WI B Kriofsky, Thomas Allan '60
Simon, James Bernard '65
WI Δ Palmer, Mark William '90
WY A Scott, Barbara Jean '73
Simon, Ronald Wayne '81

FOUNDER'S CLUB

AL A Raney, Sonya Marie '94
AL B Ashcraft Jr., James Harold '78
Carr, Emily Corinne '77
McLaughlin, Douglas E. '77
AL Γ Ingram, Eddy Lee '80
AZ A Chadik, Paul A. '84
Coxon, Moran '54
Muterspaugh, Milo E. '66
AR A Bowen, H. David '84
McKinnie, Jane Lillian '84
Morris, Stacey O. '73
Walton, Trent Avery '81
CA A Florez, Valerie Province '99
Whisler, William D. '59
CA B Almassy, William Thomas '71
Whitehead, John Charles '82
CA Γ Conti, Walter '81
CA Δ Fujihara, Glenn Yoshihiro '74
Kobayashi, Mark Victor '79
Scottoline, Charles A. '61
Thorne, Douglas Boyd '61
Woyshner, David Joseph '84
CA E Argabrite, A. Hugh '53
Brenner, Mayer Alan '78
Satorius, Edgar Harry '70
CA Z Boessow, Daniel Sherwood '57
Overbey, John Kirkwood '77
CA H Walsh, James Edward '59
Wang, Hui-Zhi Angela '88
CA Θ Fuentes, Jorge Salomón '84
Holdmann, Dale W. '78
Nguyen, Tam Thanh '81
CA I Garcia, Rodrigo T. '72
CA M Robertson, David Wayne '74
CA N Dubrall, Douglas L. '76
Khacherian, Todd Lance '86
CA Ξ Akers, David James '75
Libby, Jean Marie '80
Munsch, William Michael '88
Tyler, Steve '67
CA P Hewitt Jr., Robert Allen '86
CA T Bird, Brian Allan '89
Tran, Doc Van '89
CA Φ Bobbitt, Kelle Allen '92
CA W Ward, John Lee '00
CO A Oakley, Jilene Marie '11
CO B Ismert, John Clement '59
Muterspaugh, Helen Kavalec '78
Olson, David Roderick '79
CO Γ Goodish, Michael Irvin '70
CO Δ DeCrescentis, Joseph Michael '92
CO E Hildebrand, Diane Marie '12
CT Γ DeFelice, Frank C. '09
DE A Gardiner Jr., Francis Espey '62
Gulian, Franklin Joseph '83
Witt, Jeffrey Lawrence '81
DC B Kollar, Stephen F. '65
FL A Bedford, James Zachary '78
Brinkmann, Michael Carl '80
Caraway, Sean Lee '93
O'Steen, James Keith '67
Ruelke, Timothy James '89
Smith, Daniel J. '87
Troceen, Daniel Ross '72
FL B Hernandez, Albert Alexander '86
FL Γ Anderson, John Lowell '81
FL Δ Matkovics, Peter Imre '85
FL Θ Prieto, Eduardo '04
GA A LeCroy, Robert Thomas '83
McLain, Donald R. '53
Royer, Steven Lee '88
Savage, John Brian '81
IL A Anderson, Richard Ernest '67
Hoyt, Roger Franklin '71
Papierski, Paul Eugene '82
Ritt, Jack Arthur '52
Schneider, David Ray '72
Stubenrauch, Carl Frederick '62
Wilton, Donald Robert '64
IL B Walters, Dominic James '07
IL Γ Hill, Deborah Kay '80
IL Δ McLachlan, Christopher R. '96
IL E Schneiderman, Jean Marie '80
IN A Anders, James Larry '72
Ayers, Peter Graves '66
Beuchel, Patrick Thomas '81
Brumund, William Frank '64
Dix, Rollin Cumming '57
Hammond, Joel Charles '83
Olin, David Burton '52
Rude, Ronald Gregory '63
Stall, Richard John '63
Stiffler, William Theodore '84
IN B Roll, Richard Russell '81
IN Γ Kuehn III, Nicholas Henry '63
May Jr., Robert Joseph '68
Riederer, Andrew James '99
IA A Hoper, John Honett '62
Johnson, Howard Paul '49
Kirby, Herb '61
Philipp, Bruce Edward '63
IA B Enemark, Donald Clifford '60
Mitchell, David James '94
Stoughton, Roger Lewis '59
KS A Asher, Gary Lee '65
Henderson, James Crawford '49
Milleret Jr., George R. '70
Simpson, Trent Alan '89
KS B Schneidewind, Deanna Carol '99
KS Γ Swisher, Vicki Irene '74
KY B Gray, John H. '75
LA A Slade Jr., Bill Ernest '61
LA Γ Blanche, Brian James '87
Bowie Jr., Ralph Scott '73
Hammons, Robert William '78
Madden, Ronald Marion '72
LA Δ Hoffman III, William Cline '84
ME A Healy, Edwin David '59
Winslow, Arthur Clifford '79
MD A Dorsey, Herb Warfield '62
MD B Brundrett, C. Phillip '66
Stewart, Larry Edwin '60
MD Δ Pierson, Jeffrey Scott '05
MA A Geelan, Brendan John '66
Rawstron, William W. '57
Schurzky, Kenneth George '67
MA B Chandar, Venkat Bala '06
Fichtenbaum, Matthew L. '66
Liepins, Atis A. '57
Plotnick, Stanley K. '64
Post, Allen Edward '66
Torrielli, Luisa Kathleen '98

FOUNDER'S CLUB, CONTINUED

MA E Laios, Takis '78
Lynch, Robert Thomas '61
Murphy, Kelly Ann '83
Tsang, Janis Ka Ping '87
Tsang, Paul Tze Leung '84
MA Z Dance, Fran John '76
Whitney, Paul Vary '59
MA Θ Craven, McCharles Anthony '91
Rathbun, Rebecca Leigh '82
MA I Villamaino, Mark John '75
MI A Cameron, John Howard '68
Herrick, Robert James '68
Suchyta, Paul Joseph '08
MI B Kicinski, Stephen Edward '59
Knoll, Richard Herman '57
Kuhn, Jonathan L. '92
Wiersema, Ronald Gene '57
MI Γ Hiltunen, Dennis Richard '83
Lang, Brent Dennis '90
MacDermott, William Neil '49
Mitchell Jr., Frank John '60
Rice, Philip Alfred '59
Stoughton, Herbert Warren '73
Tuttle, Alyson M. '98
Williams, David Gerald '58
MI Δ Cerquone, Peter F. '61
Huebner, Charles Augustus '58
MI E Basberg, Douglas Spencer '69
MI Z Holland, Gerald Willard '62
Miller, Gene H. '67
MI I Maue, Susanne C. '92
Schuster, Mike Edward '96
MN A Malin, Wendell Raymond '59
Prickett, Gordon Odin '58
MS A Dowdle, Walter Lynn '67
MO A Vetter, Louis Hugo '62
MO B Coonce, Homer Eugene '52
Etling Jr., Norman George '73
Liescheidt, Brenda Ella '78
Ward, Terrence Ray '70
Weese, John R. '74
MT A Morse, Mark Harry '83
Roberts, Wallace Martin '60
NE A Cox, John Dean '85
Fortik, Jason LaVern '98
Van Skiver, Max Alan '75
NH A Bean Jr., Stanley Oscar '57
Plamondon, Maynard A. '62
NJ A Newton, Thomas Joseph '58
NJ Γ Geller, Jeremy H. '73
Gumann, Ronald John '76
McDermott, Kevin J. '65
Reznak, Frederick John '69
NM Γ Ochs, Daniel Edward '95
NY B Andrews, David Richard '45
Placentra, Nicholas Joseph '79
Strait, Bradley Justus '58
NY Γ Berman, Charles Henry '64
Carrellas, Stephen George '77
Gross, Philip Murray '62
Haslett, Robert Andrew '58
Otto, Carl W. '48
NY Δ Sawchuk, John Andrew '71
Willis III, William Thomas '66
NY Z Weschke, Rainer '67
NY Θ Quay, Jeffrey Robert '85
NY I Brand, Alfred H. '67
Drogin, Barry J. '83
NY Λ Leonardi, Thomas S. '72
Mizzi, John Vincent '63
NY M Griggs, Francis E. '56
Wiseman, Jennifer Elizabeth '04
NY N Hammer, Mark Richard '81
Markunas, Justin Kenneth '01
Wegman, Paul Martin '77
NY O Wickman, Richard Alan '76
NY P Marcovici, Janik '85
NC A Norville, John Albert '58
Seals, Eugene Harrison '68
Starkey, Robert L. '80
NC Γ Russell Jr., Parvin Masters '57
ND A Connelly, Donald P. '64
Schoot, Peter A. '85
OH A Bergin, John Michael '63
Stephan, Charles Eugene '61
Thompson, Thomas William '58
OH B Hoff Jr., Russell Stratton '51
Lang, Benjamin Otto '99
Schoo, Donald Clarence '60
Shoger, Kristen Todd '97
OH Γ Howe, James Gavin '87
OH E Courey, Karim Joseph '86
Harrold, James Leon '91
Shaniuk, Thomas Joseph '85
OH Z Kristie, Frank Martin '72
Sattler, David Vincent '69
OH H Thompson, George William '68
OH Θ Karpuszka, David Andrew '90
Keller, Robert Lee '63
OH I Snyder, Sharon E. '09
OH Λ Slovasky, Mark Stephen '85
OK A Greenberg, Charles M. '66
Seeman, Edward Earl '73
OR A Gardner, Clifton Mark '91
PA A Lucadamo, Gene Anthony '71
MacAdams, Richard Joseph '46
Matukonis, Edward Stanley '73
Moser, George M. '67
PA B Boyer, Lester Leroy '60
Chadwick, Kevin Sipling '78
Deluca, Bob Michael '70
Frick, T. Scott '93
Okrent, Scott '00
Reifsnyder, Jeffrey Wayne '80
PA Γ Bissert, Fred John '56
Flaminio, Herman '62
Fugate, David W. '84
Polefka, Allen Jack '71
PA Λ Lucas, Jay Philip '69
PA E Ott, Timothy Ray '86
PA Z Brown, Kathleen Ann Happ '85
Robinson, William Arthur '62
Schey, Donald '61
Wagman, Sander Robert '61
Weiermiller, Eugene '68
PA Θ Capuzzi, Angelo Michael '71
Capuzzi, Lynda Ann '71
PA Λ Loehlein, Werner Conrad '74
RI B Palmer, Robert Perry '59
SC A Dowdle III, H. '85
SC B Davis, Charles Marion '58
SC Γ Barnes, Stuart Marshall '79
SD A Pirner, Steven Mark '72
TN A Broome, Joseph Carroll '65
Key, Jesse Alexander '52
Whaley, Christopher Lewis '94
TN B Aya, Luis Gabriel '69
Gilbert, George Roland '68
TN Γ Walker, Robert Earl '71
TN E Thompson, David Andrew '00
TX A Johnson, Mark Edward '78
Mills, Denver L. '57
TX B Anderson, Roger Kent '60
TX Λ Allan, David Charles '87
Beal, Patrick Val '88
Pechacek, Ronald David '78
Pivonka, Thomas Gerald '72
Poulain, Marion Marquis '77
TX Z McCabe, Glen Howard '82
TX H Brant, Kelly Miller '88
Uncapher, James Patrick '77
TX Λ Pizana Jr., Robert '93
UT A Forbes, Charles Robins '49
Kelley, Brenton Collier '89
UT B Larsen, Bradford Wayne '88
VT B Guerreri, Carl N. '62
VA A Stansell Jr., Thomas Atlee '57
VA B Arntson, Stephen Garrigan '64
Blankenship, Charles Philip '60
Dunkley, Barry Thomas '71
Elliott Jr., Marion B. '53
O'Brien Jr., Walter Fenton '60
Phillips, Neubert Clayton '57
WA A Haug, Eric V. '76
Semke, Leon Kirkland '58
WA B Anderson, Kyle Joseph '03
Gimera, Michael '89
WV A Fisher, Ervin Charles '68
WV B Harper, Wendy Ann '00
WI A Carroll, Richard Dennis '71
WI B Black, Jennifer A. '01
Menning, Timothy Louis '63
Novak, David A. '77
Rupert, Jack R. '92
Widera, George E Otto '60
WI Γ Beisner, Richard Charles '74

In Grateful Appreciation of Member-Contributors

AL A Bishop, William Yancy '68
Laster, Marion Lynn '56
Packard, James Donald '88
Tamblyn, Lynn Mcclure '15
Wheeler, Kenneth Lamar '56
AL B Butler, Frank Middleton '50
AL Δ Wilson II, Dennis Michael '17
AZ A Crede, Donald Earle '64
Moxness II, James Gregory '08
AZ B Gant, Kenneth R. '85
Rever, Louis George '75
Smith, Kathryn Anne '84
AR A Crump, James Shaw '57
Garrison, Thomas Frederick '05
Heird, Vernie Eliga '60
CA B Chavakula, Vamsidhar '08
Enescu, Michael Alexander '84
Yang, Fei '11
CA Γ Boehme, Carl R. '70
Guo, Minggang '07
Tannaci, John F. '02
CA Θ Boyd, Duane '72
CA I DeVan, Glenn Charles '71
Evans, Matthew Joseph '81
CA K Gero, Jason Leon '11
CA Λ Grathwell, Travis Jacob '06
CA M Miroglio, Joel Eric '83
CA N Huff, William J. '80
Lynde, Michael Sean '06
Marciuska, Algis Jonas '86
CA Y Aine, Craig Randal '90
CA Φ Cabebe, Patrick Lucero '93
CA X Tanigawa, Shayne Kaori '95
CA AA Mow, Maurice '63
CO A O'Conor, Andrew Joseph '79
CO B Heagerty, Daniel Edward '60
Kraft, Virgil Don '55
CO Z Bode II, John Victor '86
CT A Peters, Merz Kenton '55
CT B Acton, Constance Foster '68
Woldan, Arthur '65
CT Γ Roberts, Scott Alan '92
DC Γ Trandac, Trung '81
FL A Shamblin, G. Richard '72
FL B Fernandez, Wilfredo Manuel '78
Rodriguez, Carlos Manuel '77
FL Γ Basta, James Joseph '85
FL Δ Schwartz, Michael Allen '96
Smith, Shaina Maryann '99
GA A Davies, McLean Hamilton '16
Gokcen, Serdar Nusret '92
Green, Charles Emmons '55
McGhee, Bryan Wade '67
Pass, Edgar Marvin '66
ID A Deehr, James Richard '75
IL A Schunneman, Robert Franck '52
Turkowski, Kenneth Edwin '76
Uhalt Jr., Alfred Hunt '58
IL B Hauser, Alec '81
Rosen, Edward Marshall '52
Saathoff, William Melvin '85
IL Γ Butz, James Robert '73
IL Z Lai, Katarzyna Agnieszka '91
Steinkoenig, Glen Lee '95
IN A Aebi, Brian Dethlef '95
Bales, Robert Cook '52
Cole, Larry Gene '64
Kruse, Alexander Sherman '08
Rivera, Christian P. '12
Schwartz, Alan Harris '63
Stanwood, Jay Wesley '52
Tarjan, Peter Paul '59
Thornell, Richard Earl '64
IN B Grammel, Cassandra Marie '10
King, Fred Stuart '71
Moorman, Jay Richard '94
IN Γ Doty, Michael J. '96
Zavesky, David J. '80
IN E Mereau, Oliver Pierre '02
IA A Buffington, Gregory D. '67
McClatchey, Ryan James '08
Schult, Eugene D. '49
IA B Long, Sherri Ann '79
KS A Coudeyras, James Christian '94
Everoski, Ryan Edward '03
Harrison, Dwight Harwood '55
Isbell, Cletus Howard '58
Lake, Orley Leon '61
KY A Myers, Chester James '60
KY B Schmitt Jr., George F. '62
LA A Pugh Jr., Frank Dee '85
Shoemaker, Harry Lawrence '69
Wolf, Henry Bernardo '67
LA B Graf, Peter William '95
LA Γ Mercer, Audley A. '59
Young, Charles W. '59
MD A Johnson, William Andrew '71
MD B Dorenfeld, Alan Steven '67
Freedman, Earle Sherman '50
MD Λ Malloy, Katherine Anne '99
MA A Agli, Becca '04
Levesque, Allen Henry '59
MA B Anderson, Martin David '85
Brigham, Robert Cyril '57
Carpenter, Jack William '51
Herrick, Groves Eckley '63
Walter, Robert Frederick '72
MA E Campinell, Brian F. '86
Dow, Benjamin L. '88
MA Z Gilmer, Heather Elizabeth '97
Hathaway, Wayne Herbert '70
Noblin, Ben Alton '70
MA Θ Aste, Stephen Robert '99
MI A Baldwin, Arthur Gilbert '71
Fuessel, Richard H. '61
Maier, Dirk E. '87
Single, Charles Hollister '49
Sundquist, Mark John '75
MI B Abplanalp, Laura '82
†Amaya, Alejandro '71
Durfee, George Lee '51
Hudson, R. Dennis Dennis '62
Johnson, David Norton '66
Sikkenga, Donald Peter '56
MI Γ Fleishman, Morton Robert '54
Hale, Kimberly Ann '93
Lapinski, Jacquelynn Ann '01
Moriarty, Brian Michael '58
MI Δ Ryntz Jr., Edward Frank '61
MI H Hatch, Robert Dean '53
Michaels, James David '92
MI Θ Jarbo, Sania '09
MN A Schmidt, Douglas A. '84
Walan, Alexander M. G. '94
MS A Chandler, Grant Garner '07
Hatcher, Warren Andrew '72
MS B Sims, Thomas Randall '79
MO A Bensiek, William Frederick '55
Cerutti, Allison Kathleen '13
MO B Kipp, Stephen Edward '81
Kuhn, Carol Elizabeth '62
MO Γ Mustoe, Anthony McDowell '09
Reeves, Barry Lucas '56
Schroeder, Nathan Edward '82
Willibrand, Tyler James '13
NE A Cecrle, Chad Adam '07
Johnson, James Alan '85
Roelle, Wayne Berton '55
Silver, Harry Irvin '71
Wolff, Nicholas Lowell '00
NJ A Chiarello, David Matthew '66
Jansson, Peter Allan '64
Menafra, Domenic Bernard '04
NJ B Catovic, Abir A. '89
Cornell, Jay Bradford '83
Ortiz, Mary Theresa '81
Sisco Jr., Paul Emerson '64
Vorndran, Ronald Noel '61
NJ Γ Gallagher, Thomas P. '90
Scarola, Leonard Sebastian '63
NM B Emerson, David E. '77
NY A Al-Hussain, Yahya M. '81
Zhai, Eric Xiaoyuan '03
NY B Geary, David Frederick '62
NY Γ Furman, Bill Nelson '82
Harris, Robert Philip '74
Peltz, Adrienne Nicole '07
Rizzuto, Raymond John '79
NY Δ Billiar, Kristen Lawrence '91
Zimmons, Paul Michael '98
NY E Hayden, Steven Z. '73
Refowitz, Robert M. '67
NY Z Sanfilippo, James '71
NY H Francis, Conrad Winston '76
Teitelbaum, Jack M. '57
NY Θ Subramanian, Shankar '68
NY I Capuzzi, A. Michael '01
Diskin, Glenn Stephen '84
Simms, Richard '59
NY N Coates, Donald Andrew '64
Michalek, Kenneth P. '83
NY Ξ D'Angelo III, Louis Anthony '71
NY O Leu, Derek Huc-Keng '06
NC Γ Ballard, William Ed '52
Feehan, Marcus Andrew '05
Kayagil, Turan Altay '07
ND A Dunnell, Nathaniel Charles '01
Eiken, Dwight Carmen '73
Ertsgaard, Roger Neil '67
OH A Bauer, Wolfgang Fred '59
Howard, Steven M. '85
Lepley, Allen Edwin '50
Oliphant, Robert Walter '64
OH B Roe, Howard Irvine '68
OH Γ Crawshaw, James Robert '54
Harrold, Joseph Lee '59
Powers, Galen David '69
Steele, Frederick Earle '52
OH Λ Lippian, Joseph Michael '71
OH Z Herman, Madison Rachelle '13
Steinmiller, Robert Charles '67
OH Θ Beach, Nathan '03
De Jaco, Norbert Francis '62
OK A Medina, Glenn Lawrence '20
OK Γ McCauley, Daniel W. '73
PA A Bogert, Charles Ernest '82
Flicker, Eric Lee '71
Granata, Dianne Marie '82
Orlando Jr., Stephen '65
Polyniak, Gregory Joseph '95
Radzelovage, William '61
Sumilas, John William '61
PA B Kalasheh, Amir Samuel '09
Polifko, John Terrance '70
Stuber, Gloria Grace '09
Toman, Andrew Harold '58
PA Γ Brown, Patrick Marvin '14
Dzombak, David Adam '79
Fisher, Arthur Douglas '74
PA Λ Marsh, Elbert Lynn '59
PA E Baldoni Jr., Eugene '49
Purdy III, Herbert Witts '59
PA Z Stevenson, Stanley John '80
Vessal, Moshe A. '83
PA Λ Bencho, John Robert '81
Leptinsky, Mark Edward '87
Mihaloew, John Allen '54
PR A Acevedo, Jorge L. '66
Muniz-Alfonso, Michael '02
RI A Schwartz, Bradley Dean '77
SC A Jeter Jr., David Gillam '60
Pate, Joseph '16
Pate, Thomas Michael '76
Reynolds, Leonard Darrell '75
Waddington, David Mark '84
SC Γ Decena Jr., Louie Abo '17
Guaigua, Mike Vicente '13
Kelso, William George '60
Sherard, Joseph Sullivan '73
SD A Baker, Gary Allen '72
Greaves, Wayne Ronald '71
SD B Oster, Zachary James '07
TN A Adams, Michael Eugene '91
Foster, Erick Robert '12
Kress, Reid Leonard '80
Stanfill, Ira Colon '61
Wilmoth, Kenneth Overton '63
TN Γ Tatum, Brian Alan '85
Woods, George Richard '83
TN Λ Perry, Mark Duane '90
TX A Eisenmann, Frederick George '96
Meza, Fernando Pablo '56
Ribe, Fred Linden '44
Torres-Verdin, Victor '85
TX Γ Garrison, Daniel Lewis '52
Horwitz, Michael E. '57
TX Λ Esparza, Edward Duran '66
Hunt, Julia Ann '84
Lock, Jack Allen '53
McIver, Jes David '51
Nelson Jr., Bardin H. '66
Patton Jr., Robert Lyle '57
Selensky, Fred Mitchell '71
UT A Gibbs, Charles Howard '64
UT B Bracken, Allen T. '78
Rathke, Lane E. '89
VT B Kmet, Peter Nicholas '75
VA A Romano, Cynthia Louise '87
Smith, Robert Kyle '68
Wood II, Richard Kenneth '83
VA B McClintick, Barbara Ellen '81
VA Γ Delaney, Emily Elizabeth '06
WA A Brannian, James Benjamin '83
Guy, William Earl '75
Hisayasu, Debbie Ann '83
Johnson, Brian E. '83
Rone Jr., Kenneth John '71
WI A Jaeger, Francis Clarke '88
Stucke, Troy David '89
Thompson, Dianne M. '79
Thompson, William Allan '78
WI B Mullaney, James Jerome '82
Treadwell, George Wilson '52
WY A Schneider, Keith Lee '13

SUPPORT OUR STUDENTS

FUND A FELLOWSHIP OR SCHOLARSHIP

Ruth and Cleve, *IA A '47,* Campbell with TBΠ Scholars at our annual Convention. They have funded dozens of Campbell Scholarships and permanently endowed two scholarships.

Undergraduate Scholarship:
$2,000 gift – one year award, or $1,000 gift – one semester award
$40,000 gift – permanently funds one annual scholarship

Graduate Fellowship:
$10,000 gift – one year stipend
$200,000 gift – permanently funds one annual fellowship

To sponsor a TBΠ fellowship or scholarship, contact Curt Gomulinski at tbp@tbp.org. Phone: 865-546-4578.

Executive Director's Report

By: **Curtis D. Gomulinski,** *Michigan Epsilon '01*

Members of Virginia Epsilon gather around their Bent monument following their spring initiation. Photo from the chapter's twitter account @TauBetaPiatVCU.

OVERALL, the year 2017-18 went well in many respects as trust investments reached new record levels. Support by alumni through volunteer efforts and annual contributions continues to remain strong, although additional growth in financial support is necessary to existing programming. Corporate and university financial support of the Convention remains strong while advertising in *The Bent* has dried up. The number of new members dropped after crossing 10,000 just three years ago. The 5th annual Tau Beta *Pi Day* was held on March 14. Over 135 collegiate and alumni chapters again held events in conjunction with the celebration. Over 15,000 members receive *The Bent* electronically which is an increase of 43% over last year. Over 1,600 members joined a new networking and mentoring platform called *TauBetaPi4Life* which launched last October. Alumni continue to demonstrate an interest in maintaining their affiliation with the Association through engagement in alumni chapter activities and attending conferences and alumni events.

CHAPTERS

The 2017 Convention granted a charter to the Oregon Institute of Technology, formally installed as Oregon Delta on April 14, 2018. An article about the installation was published in the Summer 2018 issue of *The Bent*.

A petition from Tau Beta Xi, the local engineering honor society at the University of Texas at Dallas, was received during the summer. An inspection committee will visit the school this fall. No additional petitions for new chapters were received and the 2018 Convention has no petitions to consider this year.

Four alumni chapters were chartered (Albuquerque, NM; Los Angeles, CA; Orange County, CA; and Pioneer in OK), one was reactivated (Central FL in Orlando), and two went inactive (Baltimore, MD, and Treasure Valley in Boise, ID); 44 of 78 alumni chapters are active.

A total of 212 collegiate chapters (229 in 2017) completed annual surveys that listed approximately 1,627 projects. A report on the contents of the survey will be published in the November 2018 issue of *The Bulletin*.

MEMBERSHIP

The chapters initiated 9,336 members in 2017-18, down 506 (5.1%) from last year. This included 8,994 undergraduates, 244 graduate students, 64 alumni, and 34 eminent engineers. Tau Beta Pi's initiated membership on July 31, 2018, was 592,858, and an estimated 67,000 are deceased.

During the year, about 51,000 engineering students in the 247 ΤΒΠ chapter schools were scholastically eligible for membership in the top fifth of their senior or the top eighth of their junior classes. About 32% of these were members of ΤΒΠ at the close of the year—down from 33% last year. About 2% were not initiated, chiefly because of their chapters' failure to hold spring ceremonies. The remaining 66% indicated a lack of interest in membership, up from 64% last year.

Tau Beta Pi chapter schools graduate about 93% of all B.S. engineers at 443 schools with ABET EAC-accredited programs and four schools without accreditation. Twenty-nine chapters held only one election and initiation of new members, no school did not conduct an initiation, and all others held two or more. Five chapters held an initiation without approval. Seven members resigned during the year, and one was expelled.

CONVENTION

The 112th Convention was held October 12-14, 2017, in Ann Arbor and Dearborn with Michigan Gamma and the Ann Arbor Area Alumni Chapter serving as hosts. The meeting was fully reported in the Winter 2018 issue of *The Bent* and the November 2017 issue of *The Bulletin*. The 2018 Convention will be hosted by Colorado Alpha, Beta, and Epsilon and the Front Range Alumni Chapter in Denver.

The 2017 Convention: approved a General Revision to replace existing Constitution and Bylaws; increased the allowed reimbursement rate for en-route dinners for the 2018 Convention and left the other rates at the levels set for the 2017 Convention; made three changes to the Ritual, charged the Director of Rituals to update the ritual to

accommodate initiates with special needs, and directed the Executive Council to create a database of members who can serve as sign language interpreters; accepted the invitation from Georgia Alpha and the Atlanta Alumni Chapter to host the 2020 Convention; requested that new template materials be developed for member recruitment, a website task force be chartered, and there be a committee on image and marketing at the 2018 Convention; granted three curriculum appeals; requested a committee on alumni chapters be chartered for the 2018 Convention; elected three new members of the Executive Council; suggested an electronic project reporting system be developed; and made several recommendations to the Executive Council for further study.

OFFICIALS

The ΤΒΠ Executive Council with term expirations includes Secretary J.P. Blackford, President S.L.R. Holl, and Treasurer G.J. Morales (2018); Vice President W.B. Paugh, and Councillors G. Youssef and M. Youssef (2019); and Councillors S.E. Fable, S.L. King-Monroe, and C.C. Smith (2020). Council meetings were held on Aug. 12, Sep. 21, Oct. 11, and Dec. 21, 2017, and Jan. 13, Apr. 28, and July 26, 28, and 31, 2018. Tau Beta Pi has five appointed directors with responsibilities in major areas of its interest: K.L. Colbry as Director of Engineering Futures, E.J. D'Avignon as Director of Rituals, T.E. Gomulinski as Director of Alumni Affairs, K.J. Hammar as Director of the District Program, and S.J. Steadman as Director of Fellowships. Members of the Fellowship Board include C.W. Caldwell, M.M. Darrow, S.C. Fantozzi, and R.E. Efimba. The Trust Advisory Committee, which directs investment activities of the corporate trustee, includes R.F. Smith (chair), H.W. Lange, and J.W. Johnson Jr.

The current list of District Directors and Engineering Futures Facilitators is available on page 52 and at *www.tbp.org/about.cfm*.

The International Headquarters staff, which is located on the Knoxville campus of the University of Tennessee, includes members Executive Director C.D. Gomulinski, Director of Chapter Programs R.E. Hawks, Major Gifts Officer S.D. Jennings-King, Data Entry Specialist A.P. Karnauch, and twelve additional employees listed at *www.tbp.org/about/hqStaff.cfm*.

AWARDS

Tau Beta Pi's top chapter prize, the R.C. Matthews Outstanding Chapter Award, was bestowed on Alabama Epsilon for the excellence of its total program in 2016-17; honorable mentions went to Florida Alpha and Iowa Alpha. The R.H. Nagel Most Improved Chapter Award was given to Wisconsin Delta; an honorable mention went to Illinois Alpha. J.D. Froula Most Improved Membership honors were extended to California Upsilon; an honorable mention was presented to Texas Gamma.

The Headquarters staff gave 47 Chapter Excellence Awards to chapters for high quality reporting, excellent chapter operations, and a commitment to improving initiation rates. Chapter Project Awards were presented to 34 chapters for ingenuity and creativity in activities.

MEMBER AWARDS

No chapters submitted a nomination for the Outstanding Advisor Award for the first time in the program's 25-year history.

The Alumnus Recognition Selection Committee consists of three District Directors: E.P. Gorzkowski III, (chair), M.C. Ferrall-Fairbanks, and T.D. Anderson. They were charged with selecting the recipients of the ΤΒΠ-McDonald Mentor Award and the Distinguished Alumnus Award. The 2018 ΤΒΠ-McDonald Mentor will be presented to James C. Hill, Ph.D., *CA Γ'62.* The 2018 Distinguished Alumnus Awards will be presented to William L. Collins Jr., *FL Γ'75;* Aprille J. Ericsson, *DC A '86;* James E. Halligan, Ph.D., P.E., *IA A '62;* and Gary D. Hoover, *IA A '61. [See pages 10, 12-13.]*

The 2018 Laureates were selected by a committee of three District Directors: J.A. Keiser, (chair), J. Hilerio-Sanchez, and C.C. McComb. They chose two Laureates from four nominees made by three chapters. The 2018 Laureates are Amy C. Kurr, *IA A '18*, and Krista L. Stribling, *IN Δ '18. [See page 11.]*

During the year, the Executive Council gave 14 Resolutions of Appreciation and 2 Distinguished Service Awards to collegiate chapter advisors and Association Officials for service to ΤΒΠ.

PROGRAMS

Sixteen districts held at least one conference last year and conducted meetings during the 2017 Convention and directors visited many chapters during the year. The Directors and the Council again cancelled the normal June 2018 meeting to reduce expenses.

ENGINEERING FUTURES

The Engineering Futures Program presented a total of 176 training sessions to 3,757 individuals by 36 volunteer facilitators to develop the leadership skills of student members during 2017-18. This award-winning program helps prepare engineering students for their careers by enhancing their overall personal effectiveness through interpersonal-skills and teamwork-development seminars.

FELLOWSHIPS

The 85th fellowship group, comprising 31 students, 30 with a $10,000 stipend and 1 with a $5,000 stipend, will do graduate work in 2018-19 and was announced in the Summer 2018 *Bent*.

GRANTS

The Council made no grant under either of the Greater Interest in Government (GIG) and the Student Assistance Programs.

MINDSET PROGRAM

MindSET promotes efforts to support math and science programs that contribute to enhanced preparation of students in the K-12 system. More than 26 ΤΒΠ chapters hosted hands-on activity sessions with local schools. At the close of the fiscal year, nearly 8,500 elementary, middle, and high school students had participated in MindSET sessions. In 2017-18, 12 grants totaling $750 were issued to 8 chapters for MindSET projects. Nearly 27% of collegiate chapters report participating in K-12 and tutoring activities last year.

SCHOLARSHIPS

The 20th group of 288 TBΠ Scholars, who will complete their undergraduate engineering studies in 2018-19, are announced in this issue. *[See page 28.]* All Scholars receive a cash grant of $1,000 or $2,000 for their senior academic year. Since the program began in 1999, Tau Beta Pi has given and committed $5,475,000 to 2,798 students.

In the TBΠ Chapter Performance Scholarship Program, $10,000 in scholarships were available to students selected by 20 chapters.

Six $1,000 scholarships were funded by the Society (for a 20-year total of 124) in 2018-19 for incoming freshman engineering students through the national program conducted by the Society of Automotive Engineers (SAE).

OTHER ACTIVITIES

Tau Beta Pi has maintained its affiliations with the American Association for the Advancement of Science and the Association of College Honor Societies and its association membership in the American Society for Engineering Education. The Executive Director is Tau Beta Pi's official representative to these organizations.

Tau Beta Pi partners with JobTarget to offer a web-based job board—The Best People—and maintains other valuable benefits for members. Nearly 5,000 jobs were posted on July 31.

The Association was a contributing society to DiscoverE 2018 (formerly National Engineers Week).

Tau Beta Pi was a titanium sponsor and hosted a booth at the 2018 USA Science & Engineering Festival in Washington, DC. Approximately 370,000 people attended the April event which celebrated and promoted the STEM disciplines. Our booth featured paper and clothespin airplane activities.

Members of the Executive Council and other Association Officials met with alumni at receptions and gatherings at 16 District Conferences and 11 other events held across the country.

Tau Beta Pi has maintained its classification under Section 501(c)(3) of the U.S. Internal Revenue Code as a tax-exempt, charitable and educational, non-private organization and is exempt from sales tax in 16 states. Alumni and collegiate chapters are separately classified under Section 501(c)(7) of the code, except Michigan Gamma, which is classified under Section 501(c)(4).

FINANCES

The financial condition of TBΠ at the close of the fiscal year was strengthened by substantial capital gains in the trust and giving by alumni remained strong. Excess revenue over expenses was $2,138,000. Assets increased in 2017-18 by $2,189,000 to a total of $31,367,000.

FINANCIAL POSITION STATEMENT

The several named trust funds are commingled and invested under the jurisdiction of the TBΠ Trust Advisory Committee. The trustee is the trust department of the PNC Bank in Cleveland, OH, and performed satisfactorily during the year.

Investment earnings of the funds, less trustee fees and including capital gains, are used for the purposes indicated by the fund titles: paying fellowship and scholarship stipends, paying for *Bent* magazines delivered to life subscribers, paying project grants to chapters in the MindSET and Greater Interest in Government Programs, supporting the Convention, and financing many useful activities of the collegiate chapters. A breakdown of the portion of the trust for each major program area is shown to the right. Overall, net earnings of the investments, including security sales and market gains, were 18.2%; the previous year's figure was 10.6%. Paid investment earnings were $1,398,000; net investment market gains were $1,461,438.

Securities held by the trustee on July 31, 2018, are carried at market value of $29,420,000, an increase of 9.1% from the previous year, and comprise holdings in 14 non-overlapping, no-load mutual funds. Equity securities constituted 90% of the total trust funds.

The current liability in fellowships and scholarships is for those stipends committed in 2017-18 for payment in 2018-19 to student recipients. The 2018 Convention liability includes the assessments paid by new initiates during the year and $66,000 in gifts from corporate and university sponsors. The deferred *Bent* subscription liability is for both annual subscriptions and the four-year subscriptions for new members included in the Association's initiation fee. The liability for delivering future magazines under four-year subscriptions is entered on the books at the time of initiation.

The decrease in *Bent* life subscription liability was countered by 80 new life subscribers. Life subscription fees are recorded as a liability because of the commitment against the annual earnings of those fees to pay for copies of *The Bent* to be delivered. This liability represents the total value of all life subscriptions in force on July 31, 2018, at their enrollment-fee prices, less an actuarial proportion of $1,325,000 recognized as revenue since 2004. Upon the death of a life subscriber, their paid fees are transferred on the books to the Fellowship Fund and are reported as revenue.

The net assets of the Association increased by $2,138,000 mainly due to the gain of value in the trust of $2,456,000 which was partially offset by lower cash assets of $187,000 and higher fellowship and scholarship liability of $77,000. A subsidiary report details the changes during the year in individual funds which posted mixed results due to market volatility.

STATEMENT OF ACTIVITIES

Chapter and initiation fees (shown less *The Bent* subscription and Convention support) decreased by $15,000 primarily due to the lower number of new members this year.

Convention revenue consists of assessments for the 2017 Convention, $77,000 in gifts, and $86,000 from alternate delegates and visitors.

Bent publication revenue decreased by $28,000 due to reduced recruitment advertising; expenses fell slightly due to more members switching to electronic delivery and lower advertising costs. Total investment earnings and market gain on the Life Subscription Fund decreased by $163,000. In 2017-18, the invested fund gained $1.12 per life copy delivered, compared with the previous year's gain of $1.78. Earnings per life copy exceeded expenses by $0.18, versus last years' gain of $0.84 per copy.

The total of interest and

THE TAU BETA PI ASSOCIATION

STATEMENT OF FINANCIAL POSITION

On July 31, 2017 and 2018

ASSETS

Current Assets	*2018*	*2017*
Cash and cash equivalents	$ 551,834	$ 738,939
Accounts receivable		
Chapters	66,494	91,935
Student loans	20,092	23,564
Bent life subscription installments	1,707	1,574
Pledges	299,248	177,500
Trust contributions	0	200,000
Other	28,170	12,375
Total Receivables	415,711	506,948
Inventory	47,538	54,557
Split-interest agreements, cur. portion	82,424	81,791
Prepaid expenses	27,664	36,008
Total Current Assets	1,125,171	1,418,243
Depreciable: Furniture and equipment	144,084	122,028
Less accumulated depreciation	(113,634)	(112,068)
Total Depreciable	30,450	9,960
Other Assets		
Investments	29,430,631	26,975,072
Split-interest agreement, net of cur. portion	781,151	775,151
	$30,211,782	$27,750,223
TOTAL ASSETS	$31,367,403	$29,178,426

Financial statements have been audited.

LIABILITIES AND NET ASSETS

Current Liabilities	*2018*	*2017*
Accounts payable		
Chapters	$ 5,300	$ 0
Member awards	7,000	11,500
Fellowships/Scholarships	873,800	797,000
Other	13,718	10,834
Accrued expenses	56,107	56,751
Deferred Convention revenue	158,910	137,020
Deferred *Bent* revenue, current	99,120	100,371
Annuities payable, current portion	19,037	19,037
Total Current Liabilities	1,232,992	1,132,513
Deferred *Bent* subscription revenue	123,241	125,764
The Bent life subscriptions	1,085,037	1,126,723
Annuities payable, net of cur. portion	79,353	84,475
Total Long-term Liabilities	1,287,631	1,336,962
TOTAL LIABILITIES	2,520,623	2,469,475
Net Assets		
Unrestricted:		
Undesignated	347,723	533,232
Designated	8,888,999	8,381,261
Temporarily restricted	11,166,910	10,052,099
Permanently restricted	8,443,148	7,742,359
TOTAL NET ASSETS	28,846,780	26,708,951
TOTAL LIABILITIES & NET ASSETS	$31,367,403	$29,178,426

dividends in 2017-18 increased by $780,000. The net gain on investments was $1,461,000 reflecting reported changes in market value.

The 11 major chapter programs (denoted with a (C) in front of their name under Expense) usually reflect an operating loss. Convention expenses dropped by $77,000 and include the cost of attendance by one student delegate from each collegiate chapter, alternate delegates, alumnus delegates, chapter advisors, and visitors—but not by Association Officials. Most of the decrease reflects a less expensive Convention location.

Expenses for fellowships and scholarships rose by $88,000 because more scholarships and fellowships were given. Revenue for these awards includes matching gifts from corporations, alumni contributions specifically earmarked by donors, and trust earnings. Fellowships and scholarships comprise the major philanthropic program of ΤΒΠ.

CONTRIBUTIONS FROM ALUMNI

Total contributions and bequests decreased by $478,000 during the fiscal year. The Association received $499,000 less in bequests and designated gifts which was offset primarily by $53,000 in additional unrestricted gifts. Tau Beta Pi's Annual Giving Campaign brought in gifts of $1,162,000 (up 1.2%) from 9,576 donors (down 7.7%), including 358 new donors (down 35.3%). Their names were published in each issue of *The Bent*. Included in the total is $56,000 allocated to the Chapter Endowment Initiative and the Fellowship, Scholarship, and Engineering Futures Programs from 261 companies that match gifts from employees.

INITIATION FEES

Tau Beta Pi's low Association initiation fee covers the cost of the official badge, membership card and certificate, copies of the *Constitution and Bylaws* and *Information Book*, and a four-year subscription to *The Bent*. The initiation fee has been $55 since August 1, 2016, and includes $10 that is used for partial support of the annual Convention.

STUDENT LOANS

Two new loans were made to members in 2017-18. Five loans were repaid, none were written off during the year, leaving 11 outstanding on July 31, 2018, with a principal balance of $20,092. Since inauguration in 1932 of the program, 1,804 loans have been made to student members for a total of $903,000.

PUBLICATIONS

During 2017-18, the four issues of *The Bent* contained a total of 208 pages, and 395,000 copies were delivered to paid subscribers. This represents a 0.4% decrease in paid copies below the previous year's circulation total. Engineering and graduate-school recruitment advertising for the year totaled 7 pages, a 19% decrease from the previous year. Total production cost of the magazine per paid copy was $0.94, unchanged from the preceding year.

New *Bent* life subscribers numbered 80 (up from 64), bringing total life subscriptions to 80,474. Of all the life subscribers enrolled since 1929 when the plan was instituted, 14,329 are deceased, and their fees totaling $424,200 have been transferred to the Fellowship Fund in accord with the Constitutional requirement.

An average of 71 copies per issue

THE TAU BETA PI ASSOCIATION

STATEMENT OF ACTIVITIES

For the years ended July 31, 2018 and 2017

REVENUE	*Unrestricted*	*Temporarily Restricted*	*Permanently Restricted*	*2018*	*2017*
Initiation and chapter fees and fines	$ 312,203			312,203	327,685
Chapter and individual sales	184,877			184,877	183,769
Contributions and bequests	1,153,056	11,193	694,156	1,858,405	2,336,018
Convention	261,660			261,660	278,674
Bent publication	143,221			143,221	171,567
Net life subscription fee transfer	47,241			47,241	37,983
Student loan interest	2,229			2,229	1,232
Miscellaneous/ Net gain on equipment sales	11,923			11,923	14,363
Interest and dividends	539,613	914,874		1,454,487	674,697
Net gain (loss) on investments	564,597	896,386		1,460,983	3,566,951
Change in value of split-interest agreements			6,633	6,633	(25,670)
Net assets released from restrictions	707,642	(707,642)	0	0	0
TOTAL REVENUE	3,928,262	1,114,811	700,789	5,743,862	7,567,269
EXPENSE					
Program services					
(C) Advisor Program	24,967			24,967	24,244
Alumni Program	63,907			63,907	78,835
Bent publication	369,821			369,821	372,819
(C) *Bulletin* production	22,056			22,056	20,613
(C) Chapter and initiate supplies	385,780			385,780	362,175
(C) Convention	575,484			575,484	652,025
(C) Cost of chapter and individual sales	160,529			160,529	147,285
(C) District Program	238,843			238,843	226,265
(C) Engineering Futures Program	133,887			133,887	143,127
Fellowship & Scholarship Program	955,164			955,164	867,495
(C) Greater Interest in Government Program	5,723			5,723	5,428
(C) K-12 MindSET Program	37,534			37,534	33,064
(C) Laureate Program	11,609			11,609	14,728
McDonald Mentor Program	4,633			4,633	5,820
(C) Student Assistance Program	2,449			2,449	4,132
Student Loan Program	6,783			6,783	6,682
Total program services	2,999,169			2,999,169	2,964,737
General and administrative	319,756			319,756	271,947
Alumni Giving Program	287,109	0	0	287,109	265,412
TOTAL EXPENSE	3,606,034			3,606,034	3,502,096
CHANGE IN NET ASSETS	322,228	1,114,811	700,789	2,137,828	4,065,174
Net assets, beginning of year	8,914,494	10,052,099	7,742,359	26,708,952	22,643,778
Net assets, end of year	$9,236,722	11,166,910	8,443,148	28,846,780	26,708,952

Financial statements have been audited.

in 2017-18 was delivered to annual renewal subscribers, 38,328 copies to original four-year subscribers, and 60,427 copies to life subscribers, for a total of 98,826 paid copies per issue. The total number of paid copies for the Summer 2018 magazine was 98,973.

The Association is indebted to the alumni who serve as judges and writers of the Brain Ticklers column: H.G. McIlvried III, Ph.D. (chair), J.C. Rasbold, J.R. Stribling, Ph.D., and F.J. Tydeman.

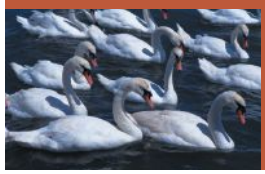
THE BULLETIN

During 2017-18, the four issues contained a total of 41 pages, and no copies were printed. All issues are available on the website. Published chiefly for sharing information with student members, officers, and advisors of the collegiate chapters, the newsletter is a valuable means of exchanging project ideas and distributing advice and guidelines related to chapter operations.

OTHER COMMUNICATIONS

New editions of the *Constitution and Bylaws and Eligibility Code* and the *Information Book* were printed in 2018 and 2017 respectively. Other brochures and materials were updated and reprinted throughout the year.

Tau Beta Pi's presence on social media continued to increase. Nearly 27,300 members are part of our LinkedIn group, over 1,000 people follow @*taubetapi* on Twitter, 4,300 people "like" ΤΒΠ, and 400 people are in the "Tau Beta Pi for Members" group on Facebook, and over 3,600 people read our blog with daily news over 5,500 times last year. The website has received over 71 million visits since its creation and contains a wealth of operational and historical information about the Society. Visit *tbp.org* to find the latest ΤΒΠ news!



CHAPTER ETERNAL

The condensed style of these notices of death is made necessary by Tau Beta Pi's large membership and space limitations in The Bent. *You may email or write the Editor for additional facts (if available) concerning the following deceased members. The assistance of all is earnestly sought in reporting the deaths of Association members, with appropriate details, including date of death and full name. You may report the death of a member by sending an email to chapter.eternal@tbp.org.*

AL A '58 **Brackney, William Michael;** June 10, 2018.
'64 **Bonnett, Robert Wayne;** May 10, 2018.
'70 **Fluker III, Thomas Randall;** April 14, 2018.
'73 **Topazi, Anthony Joseph;** July 6, 2018.
AL B '49 **Holley, Joseph Reed;** July 5, 2018.
'58 **Karrh, John Barnard;** December 5, 2017.
AK A '92 **Williams, Jason David;** January 29, 2018.
AZ A '50 **McHenry, James A.;** July 16, 2009.
AR A '48 **Brewer, Harold Kenneth;** December 31, 2005.
CA A '47 **Martin, Leroy;** November 9, 1994.
'50 **Owen, John Marvin;** January 26, 2017.
'65 **Weathersby, George Byron;** January 23, 2012.
CA B '56 **Fletcher, George Louis;** August 20, 2018.
CA Γ '42 **Reel, Richard Harrison;** May 14, 2010.
CA Δ '47 **Parker, Burns V.;** no details.
CA E '48 **Auerbach, Albert;** October 27, 2013.
CA Θ '57 **Mevers, Maryann;** no details.
CA M '49 **Lamouria, Lloyd Henry;** October 22, 2001.
CA Ξ '82 **Davidson, Daniel Martin;** May 19, 2017.
CA Ψ '95 **Lucero, Ramon Eduardo;** January 14, 2015.
CO A '53 **Mueller, Francis Oscar;** October 21, 2008.
CO B '45 **Cain, Leroy Richard;** August 29, 2017.
'46 **Spears, Howard Calvin Knox;** March 21, 2018.
'50 **Cope, Eddie Gene;** July 15, 2014.
'81 **Baxter, Donna Deluca;** September 19, 2014.
CT A '48 **Day, John Nelson;** February 16, 2013.
'49 **Fowler, Timothy Hazen;** July 19, 2014.
'51 **James, Rodney Lee;** August 2, 2018.
CT B '55 **Czyz, Iwan;** no details.
DE A '50 **Wilkes, Lester Dale;** August 19, 2018.
FL A '42 **Lindgren, Erik Rune;** July 17, 2016.
'61 **Godwin Jr., Owen Luther;** July 18, 2016.
'71 **Yezzi, Anthony Joseph;** November 11, 2004.
GA A '45 **Hancock, Charles Coleman;** no details.
'48 **Serralles III, Pedro Juan;** November 4, 2015.
'49 **Brown, Floyd Irving;** February 13, 2006.
'49 **Green Jr., Thomas Harrison;** March 21, 2004.
'49 **Malone, George D.;** September 1, 2004.
'50 **Colton, Ervin;** October 30, 2016.
'50 **Marx, Stanley Barry;** June 26, 2018.
'58 **Barnhardt, Jacob Charles;** May 12, 2018.
'63 **Dye Jr., Kyle Edward;** November 25, 2012.
IL A '43 **Mueller, Erwin Ferdinand;** December 2, 2005.
'45 **Whalin Jr., Edwin A.;** May 29, 2016.
'47 **Leibinger, George Edward;** June 1, 1985.
'47 **Opperman, David Russell;** July 5, 2016.
'49 **Hevesh, Avery Herbert;** May 20, 2018.
'50 **Reber, Russell Hallie;** no details.
'51 **Hahn, Ralph Crane;** July 26, 2016.
'51 **Hartman, Wayne Everett;** January 30, 2016.
'51 **Mueller, Eugene Albert;** February 15, 2016.
'55 **Somerville, Richard Taylor;** July 17, 2018.
'65 **Bode, Loren Eugene;** December 3, 2014.
IL B '49 **Erickson, Alfred Gustav;** August 29, 2006.
'55 **Milenkovic, Veljko;** April 11, 2009.
IL Γ '46 **Reed, Ronald Louis;** March 3, 1996.
'48 **Palmer, Charles Guy;** December 8, 2002.
'53 **Aagaard, James Stuart;** June 22, 2018.
'55 **Broker, Bruce;** December 27, 2013.
IL Δ '75 **Gilles, James Edward;** November 26, 2017.
IN A '39 **Buechler, Ralph Merle;** March 25, 2017.
'41 **Rockwood, Charles Henry;** May 16, 2000.
'42 **Kremmel, Walter Edward;** December 3, 2017.
'43 **Ferry Jr., Frank Farwell;** June 27, 2008.
'44 **Costas, John Peter;** August 9, 2008.
'45 **Craft, Donald William;** January 31, 2012.
'47 **Bryant, Francis Edwin;** May 9, 2007.
'47 **Dominik, Jack Edward;** December 17, 2008.
'48 **Burkart Jr., Harry August;** November 1, 2000.
'49 **Hunt Jr., John Thomas;** May 10, 2018.
'49 **Schaffner, Gerald A.;** October 30, 2015.
'50 **Keyt, Donald Emil;** March 6, 2005.
'50 **Pagerey, Paul Francis;** September 16, 2016.
'53 **Ellis, Richard Maryon;** March 22, 2017.
'57 **Mulholland, John Derral;** November 11, 2008.
'59 **Miller, Charles Eugene;** April 16, 2018.
IN B '42 **Frist, Harold B.;** August 16, 2005.
'57 **Jackel Jr., Henry E.;** June 29, 2018.
IN Γ '66 **Brunell, Randolph Donald;** November 12, 2017.
IN Δ '71 **Urschel, Joe Richard;** no details.
IA A '41 **Cade, Phillip Joseph;** no details.
'43 **Deere, Don Uel;** January 14, 2018.
'43 **Runft, Arthur John;** October 18, 2005.
'46 **Stout, Thomas Melville;** October 5, 2016.
'10 **Sukup, Eugene George;** July 12, 2018.
IA B '47 **Buchwalter, Richard Lee;** February 6, 2018.
'47 **Goetz, John Lawrence;** April 5, 2018.
'48 **Moore, Raymond Eugene;** July 3, 2018.
'49 **Bolte, William Charles;** December 26, 2011.
'66 **Phillips, Gary Dean;** July 25, 2018.
KS A '48 **Beeler Jr., Joe R.;** no details.
'49 **Bradley Jr., Jack Ralph;** June 24, 1991.
'49 **Krall, William Francis;** December 7, 2002.
'49 **Winter, Ralph O.;** June 24, 2018.
'60 **Heimovics, John Francis;** July 22, 2018.
KS Γ '57 **Cooper, Peter Bruce;** May 12, 2016.
KY A '51 **Jenkins, Lloyd William;** July 1, 2018.
'69 **Wade, Caroline Patrick;** November 26, 2015.
KY B '46 **Heaton Jr., William Sutcliffe;** July 7, 2018.
LA A '41 **Ferro Jr., Bernardo Jose;** February 1, 1989.
'42 **Gulick, Walter Cox;** no details.
'51 **Brian, Pierre Leonc Thibaut;** April 2, 2018.
'51 **Tinney Jr., Joseph Friedman;** March 4, 2010.
'53 **Lodato, Joseph Salvadore;** June 13, 2018.
'73 **Williams, Mark Lane;** July 18, 2018.
LA B '41 **Wood Jr., William Andrew;** January 28, 1997.
'51 **Finney, John Clarence;** August 3, 2005.
'51 **Leonard, Leon Charles;** no details.
'53 **Huber, Martin Louis;** June 8, 2005.
ME A '43 **Carlson, Arthur Fletcher;** August 4, 2004.
'44 **Suminsby, John Edward;** January 16, 2017.
'50 **Block, Irving Gerald;** December 21, 2017.
'50 **Tamm, Richard Carl;** July 24, 2018.
'53 **Connor, Edward John;** July 28, 2018.
MD A '41 **Moore, John Thomas;** December 18, 2004.
'43 **Wolman, Lee Mark G.;** November 11, 2006.
MD B '50 **Dougherty, James Robert;** July 6, 2018.
'55 **Workman, Joseph Brewster;** July 10, 2018.
'56 **Burdick, Martin Myrl;** May 13, 2018.
'62 **Whitehead, Edward Ray;** August 19, 2018.
MA A '42 **Merriam, Frederic Cutter;** August 11, 2006.
'43 **Bennett, Elmer William;** August 27, 2015.

		'46	**Hickey, Gerald Francis;** January 10, 2016.
		'48	**Lerner, Robert Martin;** December 31, 2010.
		'48	**Pike, Arthur Lord;** July 7, 2015.
MA	B	'38	**Acker, David Elric;** November 2, 2015.
		'38	**Wilson Jr., Albert Olof;** December 24, 2017.
		'45	**Vershbow, Daniel Robert;** June 15, 2003.
		'46	**Heuchling, Theodore Paul;** December 23, 2017.
		'46	**Sparrow, Marvin;** June 28, 2018.
		'47	**Midney, John Henry;** July 11, 2018.
		'48	**Fries Jr., John Edwin;** May 14, 2016.
		'49	**Osborn Jr., Paul Victor;** May 14, 2007.
		'50	**Hertzmark, William S.;** November 21, 2003.
		'62	**Eastman, Dean Eric;** March 4, 2018.
MA	Δ	'45	**Uhlir Jr., Arthur;** June 17, 2016.
		'47	**Robinson, George Hamilton;** January 4, 2002.
MA	E	'42	**Nowak, Welville Berenson;** July 16, 2017.
		'45	**Freedman, Nathan;** May 30, 2010.
		'46	**Harris, Maurice Richard;** no details.
		'47	**Silverstein, Daniel Joseph;** July 18, 2017.
		'51	**Hildreth, Alan Ellsworth;** December 19, 2015.
		'52	**Halligan, Robert Peter;** May 4, 2001.
MA	Z	'50	**Crain, Melvin;** May 14, 2018.
		'58	**Kearns, Robert Francis;** May 4, 2018.
MI	A	'41	**Kelley, Eugene Wallace;** September 1, 2016.
		'51	**Sigan, Jack William;** April 12, 2018.
		'55	**Lawrence, Wilford George;** December 17, 2015.
		'60	**Rutchow, William Edwin;** December 19, 2015.
		'71	**Welper, Andrew Thomas;** December 22, 2015.
MI	B	'41	**Huber, Glenford Ronald;** June 28, 2016.
		'48	**Erickson, Arne Eric;** June 14, 2007.
		'56	**Alanen, Reino E.;** July 16, 2018.
		'57	**Barlow, Kent Michael;** August 16, 2010.
MI	Γ	'42	**Bangert, John Theodore;** April 8, 2003.
		'42	**Congdon, Richard Lawrence;** February 8, 2011.
		'42	**Luecht, John William;** August 11, 2007.
		'44	**Schwartz, Lawrence Robert;** July 30, 1992.
		'45	**Taylor, Robert Lawrence;** April 21, 1994.
		'46	**Dayton, Forrest Rogers;** May 30, 2010.
		'47	**Lutzker, Lawrence;** March 17, 2018.
		'48	**Maxey, Lyle Allan;** February 9, 2004.
		'49	**Jansen, William Robert;** November 21, 2015.
		'50	**Kovitz, Arthur Abraham;** April 30, 2018.
		'50	**Lauer, John Edward;** no details.
		'55	**Trojan, Paul Karl;** June 28, 2016.
MI	Δ	'38	**Friedel Jr., Joseph Charles;** November 24, 1992.
		'44	**Doyle, Arthur Vincent;** March 27, 2008.
		'51	**Fedorchuk, Henry N.;** no details.
		'64	**Taraman, Khalil S.;** June 5, 2018.
MI	E	'48	**Morin Jr., Dornis Clinton;** November 17, 2016.
MI	Z	'51	**Jester Jr., Herbert Garrett;** June 10, 2018.
MN	A	'39	**Anderson, Homer Spencer;** October 26, 2001.
		'42	**Eustis, Robert H.;** May 24, 2018.
		'48	**Christopherson, Charles D.;** February 1, 2016.
MS	A	'40	**Bopp, Herman Francis;** January 18, 2018.
		'49	**Bader, Daniel Markham;** April 8, 2011.
		'49	**Carnes, Walter Rosamond;** October 5, 2011.
		'50	**Beckham, Ladell;** no details.
		'66	**Cunningham III, George William;** May 24, 2018.
		'90	**Vail Jr., William Felix;** January 3, 2009.
MO	A	'48	**Cummins, James Donald;** July 1, 1986.
		'51	**Hickman, Walter Eldon;** no details.
		'76	**Dworak, Joseph Alan;** August 20, 2006.
MO	B	'41	**Bennetsen, Wayne John;** July 11, 2018.
		'48	**Smith, Hubert Ronald;** August 3, 2003.
		'49	**Zakin, Jacques L.;** January 16, 2018.
		'53	**Dannenbrink, Wayne Charles;** March 8, 2018.
MO	Γ	'53	**Mueller, Alfred Paul;** September 5, 2009.
NH	A	'56	**Hildreth, Howard Russell;** March 13, 2018.
NJ	A	'41	**Schaefer, Arthur Robert;** November 15, 2007.
		'42	**Francis, Arthur E.;** no details.
		'43	**Lawrence, Kenn Hoyt;** March 2, 2016.
		'44	**Goryl, William Munder;** March 17, 2018.
		'47	**Neill Jr., William J.;** July 24, 2017.
		'52	**Leibiger, Gustave Adolphe;** August 11, 1998.
NJ	B	'49	**Walz Jr., Joseph Andrew;** June 3, 2001.
		'50	**Huber, George Smith;** December 21, 2013.
NJ	Γ	'43	**Glade-Boyle, Gerard;** June 6, 2002.
		'47	**Leonard, George E.;** April 12, 1998.
		'54	**Abate, John Edward;** no details.
		'54	**Smith Jr., Marvin Frederick;** August 16, 2018.
		'67	**Indahl, George William;** June 30, 2018.
NM	B	'54	**Seth, Charles Edward;** February 23, 2017.
NY	B	'42	**Briggs, John Ogden;** December 4, 1997.
		'44	**Walsh Jr., Gerald William;** December 3, 2014.
		'48	**Regan Jr., Thomas John;** September 12, 2017.
		'48	**Schlecht, Martin Frederick;** April 15, 2017.
NY	Γ	'42	**Mathews, Charles Wesley;** September 10, 2001.
		'42	**Whiteley, Harold Earle;** April 23, 2011.
		'46	**Carlson, Raymond Leonard;** February 4, 2011.
		'47	**Rogers, Donald G.;** June 28, 2018.
		'50	**Finney, William Everett;** August 8, 2003.
		'52	**Shull, Duane H.;** June 17, 2018.
		'60	**Kirkpatrick, James Darrow;** January 4, 2014.
		'60	**Tyrrell, John McDonald;** July 11, 2018.
		'61	**Travis, William John;** October 1, 2004.
NY	Δ	'44	**Hart, Charles Stanly;** March 30, 2012.
		'46	**Fisher, Charles Raymond;** December 27, 2004.
		'54	**Dardin Jr., Vincent Joseph;** October 15, 2015.
		'56	**Conroy, Eugene Dodds;** July 1, 2018.
		'57	**Merkle, Douglas Hall;** May 20, 2018.
		'62	**Meinig, Peter Carl;** September 25, 2017.
NY	E	'41	**Allerton, Joseph;** August 9, 2018.
		'45	**Mueller, Wheeler K.;** May 6, 2009.
		'47	**Jaffe, Herbert Roy;** December 2, 2016.
		'51	**Hollander, Lawrence Jay;** May 12, 2018.
NY	Z	'40	**Czarnecki, John Daniel;** December 3, 1996.
		'43	**Cammarata, John;** October 17, 1999.
		'43	**Lago, James;** January 1, 2018.
		'51	**Clark, Philip Raymond;** March 28, 2018.
		'68	**Brodsky, William L.;** September 15, 2009.
NY	H	'42	**Paradise, Lionel Phil;** September 22, 2010.
		'43	**Smithberg, Eugene H.;** September 23, 2014.
		'44	**Korner, Renzo Louis;** August 24, 2009.
		'48	**Avallone, Eugene A.;** March 30, 2008.
		'48	**Fuchs, Abraham Max;** February 11, 2016.
		'48	**Kornbluth, Allan Elliot;** June 24, 2005.
		'49	**Lesky, David Harry;** September 17, 2010.
		'51	**Greenwood, Fred;** October 31, 2005.
		'52	**Hamburger, Theodore;** April 8, 2008.
NY	Θ	'44	**Guidi Sr., Justin Joseph;** September 3, 2016.
		'50	**Gero, Donald Edward;** no details.
		'50	**Philip, Ralph Michael;** June 13, 2018.
		'87	**Babcock, Gregg Byron;** no details.
NY	I	'43	**Korn, Karl E.;** October 21, 2004.
		'44	**Reed, Joseph;** August 6, 1998.
		'49	**Oppenheimer, Ernest;** July 2, 2010.
NY	K	'50	**Bosworth Jr., William Hamlin;** March 25, 2000.
NY	Λ	'47	**Orr, William Robert;** July 25, 1991.
NC	A	'49	**Greene, Basil;** January 5, 2006.
		'56	**Jones, Michael H.;** June 28, 2018.
		'58	**Whicker, Gene Thurmond;** July 6, 2009.
NC	Δ	'96	**Kelly, Abbot Bowman;** May 5, 2018.
ND	A	'69	**Leier, Donald Jay;** June 25, 2017.
OH	A	'38	**Seaver, William Burleiger;** July 28, 2018.
		'46	**Wentworth, John Page;** October 3, 2015.
		'69	**Christoph, Albert Claude;** January 30, 2007.
OH	B	'49	**Wuerth, Raymond Edward;** no details.
		'52	**Halloran, Kenneth A.;** June 16, 2015.

		'55	**Harroff, Jerry Marlin;** May 27, 2018.
		'59	**Codispoti, Bruno Louis;** September 9, 2013.
OH	Γ	'42	**Caton Jr., Albert Joseph;** June 28, 1993.
		'42	**Green, Robert Smith;** May 2, 2017.
		'44	**Crawford, Arthur R.;** February 4, 2016.
		'45	**Han, Lit Sien;** April 13, 2017.
		'48	**Walter, Carlton H.;** March 8, 2016.
		'49	**Fling, Russell Sharon;** March 23, 2018.
		'49	**Hoover, Bruce Campbell;** July 4, 1997.
		'49	**Kibbey, Donald R.;** April 2, 2015.
		'50	**Grover, Raymond Arthur;** September 8, 2016.
		'50	**Keyes, Franklin Miller;** May 22, 2012.
		'51	**Cooke, David Clark;** December 13, 2015.
		'53	**Shepherd, Lloyd Paden;** December 3, 2012.
		'55	**Beisner, Henry Michaels;** August 7, 2018.
		'62	**Fette, Charles J.;** March 22, 2018.
		'72	**Smith, Stephen Donald;** May 16, 2018.
OH	H	'45	**Crouch, Jack Graham;** February 26, 2006.
		'82	**Jochum, Keith Bernard;** June 1, 2013.
OH	Θ	'65	**Shimovetz, Ralph Melvin;** August 13, 2018.
OH	M	'57	**Van Tassel, James H.;** June 19, 2018.
OK	A	'48	**Gunning, Ira Curtis;** February 25, 2018.
		'51	**Stepp, Earle Heartsill;** August 2, 2010.
OK	B	'42	**Born, Harold J.;** March 31, 2005.
		'77	**Smith, William Lindley;** October 3, 2017.
OR	A	'42	**Nelson, Melvin Bernard;** August 9, 2005.
		'46	**Hayden, James Edward;** October 31, 2007.
		'51	**Coakley, Robert Dennis;** January 28, 2018.
		'52	**Halligan, Darrell Wayne;** February 11, 2018.
		'53	**Young, Stephen;** no details.
OR	B	'07	**Carlton, Charles Claude;** no details.
PA	A	'44	**Diehl, Edward Lewis;** May 29, 2014.
		'51	**Finan, John Marshall;** March 13, 2017.
		'60	**Clausen, William Earle;** August 10, 2011.
		'71	**Hoover, John Blake;** no details.
PA	B	'49	**Grace, Clinton Harvey;** no details.
		'52	**Huber, Robert Evans;** December 4, 2005.
		'53	**Cherry Jr., Robert Homer;** June 21, 2012.
		'56	**Beeman, James Forest;** March 12, 2013.
		'57	**Wright, Dennis C.;** June 15, 2018.
PA	Γ	'48	**Hawkins, Wilton Arthur;** June 27, 2018.
		'00	**Fan, Laurel;** July 24, 2016.
PA	Δ	'43	**Haaz, Jack Samuel;** June 6, 1995.
PA	E	'41	**May, Richard David;** March 10, 2012.
		'47	**Magee, William Robert;** July 14, 2018.
		'55	**Deliyannides, John Savvas;** July 10, 2018.
PA	Z	'42	**Bicking, John Beeh;** December 1, 1982.
		'43	**Murphy Jr., Joseph Alfred;** October 23, 1998.
		'47	**McDonald, Truman Robert;** February 20, 2008.
		'54	**Marshall, Joseph Hutton;** July 4, 2018.
		'57	**Stiefel, Robert Carl;** April 4, 2018.
		'58	**Haufler, George Joseph;** no details.
		'64	**Pecsvaradi, Thomas;** no details.
PA	H	'45	**Berez, Ernest Sheldon;** April 16, 2000.
		'53	**Boston, Robert Lewis;** no details.
PA	Θ	'64	**Jurasinski, Walter John;** August 4, 2018.
RI	A	'46	**Harrington, William John;** November 29, 2003.
		'46	**Pease, Lynn Marcy;** no details.
		'48	**Anderson, Gordon F.;** October 21, 2000.
RI	B	'49	**Doyle, George William;** June 26, 2011.
SC	A	'43	**Stribling Jr., Stiles Conger;** January 9, 2014.
SC	B	'50	**Nance, Robert Andrew;** no details.
		'68	**Born, John Julius;** February 1, 2010.
SD	B	'49	**Oleson, George H.;** November 5, 2001.
TN	A	'43	**Brown Jr., William Bachman;** July 9, 2005.
		'44	**Ludwig, Robert Lee;** December 8, 2003.
		'47	**Lane, Perry Virgil;** July 9, 2001.
		'50	**Early, A. Thomas;** July 18, 2018.
		'57	**Whicker, Lawrence Rhea;** June 21, 2018.
		'62	**Hutton, John Thomas;** June 26, 2018.
TN	B	'42	**Griffin, George Goetchius;** no details.
TX	A	'41	**Collier, Oran William;** March 16, 2009.
		'49	**Davis Jr., Wilbur Raymond;** no details.
TX	B	'43	**Day, Jimmy William;** December 24, 2010.
		'49	**Bauerlein, Rex Raymond;** no details.
		'49	**Crawford, Horace R.;** December 16, 2015.
		'58	**Wilkins, Lloyd Lester;** August 12, 2018.
TX	Γ	'42	**Boyer, John Leslie;** no details.
		'48	**Hill Jr., John Francis;** May 25, 2009.
TX	Δ	'42	**Robertson, Richard Bentley;** June 27, 2018.
		'53	**Hooper, Clarence Darrow;** August 19, 2018.
		'55	**Foxworth, Charles Douglas;** no details.
		'58	**Roberts, Warren Hugo;** June 21, 2018.
		'64	**Kinzbach, Robert Benton;** no details.
TX	I	'65	**Mumford, Willard Royal;** June 4, 2018.
UT	A	'47	**Bills, Reed Gordon;** April 22, 2012.
		'48	**Kephart Jr., John Thatcher;** June 16, 2018.
VA	A	'42	**Barber, George Cullen;** August 29, 2015.
		'63	**Browning, Harold Dickenson;** May 27, 2018.
VA	B	'40	**Robins, Nathaniel Bowman;** May 1, 2006.
		'43	**Hickey Jr., Weyman Parks;** no details.
		'45	**Mehring, George K.;** March 17, 2009.
		'47	**Rich, Linvil Gene;** September 29, 2011.
		'50	**Abrams, Leonard Alban;** November 12, 2009.
		'50	**Taylor Jr., Oswald D.;** August 10, 2018.
		'51	**Tatum Jr., Peebles Selden;** August 10, 1992.
WA	A	'55	**Keyes, Gilbert Walter;** no details.
		'59	**Beers III, Frank Troxell;** August 15, 2017.
		'81	**Langebartel, Edwin J.;** June 18, 2018.
WA	B	'49	**Kelly, Philip McCrary;** August 14, 2006.
WV	A	'42	**Cain, Dallas Ellsworth;** September 30, 2015.
WI	A	'41	**Freres, Robert Nicholas;** no details.
		'43	**Loeffler, Alvin Fred;** December 11, 2017.
		'48	**Gemlo, John Edwin;** March 9, 2018.
		'49	**Schlintz, Ralph Arnold;** July 25, 2018.
		'54	**Greiner, Richard A.;** January 29, 2015.
		'57	**Buettner, Donald Richard;** December 16, 2017.
		'62	**Moll, Richard A.;** July 30, 2015.
		'77	**Mullins, Brian William;** February 24, 2018.
WI	B	'43	**Jansen, Russell Edwin;** June 9, 1993.
		'45	**Hauser, Hans;** March 12, 2018.
		'45	**Kutcher, Robert Drought;** November 19, 2017.
		'47	**Jewett, David Maurice;** September 9, 2002.
		'51	**Klein, Carl Ulrich;** August 5, 2018.
WY	A	'51	**Chmielewski, Walter S.;** September 1, 2016.

IN MEMORY

Lawrence J. "Larry" Hollander, P.E., *New York Epsilon '51,* passed away on May 12, 2018, at the age of 91. Larry served Tau Beta Pi as a volunteer in many capacities: an Executive Councillor in 1974-76; Vice president from 1976-78; a member of the Fellowship Board for 20 years and Director of Fellowships for 13 years. He received his B.S. and M.S. degrees in electrical engineering from New York University, where he later taught, and was a dean at the Cooper Union. He was dean of engineering emeritus at Union College at the time of his death, where he had been since 1986 and established an engineering scholarship and a music prize.

John R. "Jack" Loveland, P.E., *New York Beta '59,* passed away on May 18, 2018, in Jamesville, NY. He served as an Executive Councillor of Tau Beta Pi from 1974 to 1978. He was a graduate of Syracuse University where he earned a bachelor's degree in civil engineering and a master's in business administration. Jack held a professional engineering license in nine states and culminated a 40-year career with O'Brien & Gere Engineers, Inc. by serving as president for twelve years. He was also an active member in many professional, business, and civic organizations at the local, state, and national levels. (He was listed in Summer 2018 Chapter Eternal.)

ALUMNI CHAPTERS GET TOGETHER

The NYC Alumni Chapter hosted a picnic on July 21 in Central Park to welcome the newly graduated members who have moved to NYC this summer.

The Puget Sound Alumni Chapter had an awesome time at the Tau Beta Pi Summer Social on July 25. They extended a thank you to their special guest, Ken Brettman from the Army Corps of Engineers, who gave them an engineer's perspective and insider's tour of the locks and fish ladder. There were 17 people at the event —not including the 6 or so tourists who joined them for part of it. The weather was perfect and the conversation and cold drinks were a nice way to end the event afterwards at The Hi-Life.

MILWAUKEE MEETING FOR LEADERSHIP

The Executive Council and Executive Director met in Milwaukee on August 25. That evening, Tau Beta Pi and the Milwaukee Area Alumni Chapter hosted a reception for local alumni. Some 32 people attended, including two WI B student officers.

Headquarters staff are available to take your calls from 7:30 a.m. to 5:00 p.m. ET, Monday through Friday at 865/546-4578. The office will be closed in observance of the following holidays:

- New Year's Day
- President's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving
- Friday after Thanksgiving
- Christmas Eve
- Christmas
- New Year's Eve

CALIFORNIA KAPPA CHAPTER MARKS 50TH ANNIVERSARY

A banquet was held on April 21, 2018, to commemorate the 50th anniversary of the California Kappa Chapter since the chapter's formation in 1968 at California State University, Northridge (CSUN), formerly known as San Fernando Valley State College. There were several notable alumni speakers and guests, including Chief Advisor Dr. Kourosh Sedghisigarchi, Advisor Ali Amini, Executive Councillor George Youssef, District 16 Directors Neal Bussett and Sam Rokni, and CSUN Chair of ECE Department George Law. Chapter President, Yin Fung Khong, presented 50th Anniversary polos and composite yearbook photos featuring all advisors, officers and members to the advisors and guests. Youssef presented the chapter a 50th Anniversary plaque on behalf of the national Association and the chief advisor also presented Yin a plaque in recognition for his extraordinary dedication and leadership.

• A petition to charter the **Albuquerque Alumni Chapter** was approved by the Executive Council on April 28. Join the Albuquerque alumni email list by contacting Anthony Montoya at *anthonylmontoyajr@icloud.com.*

• **Nebraska Alpha** is looking for Tau Bates to serve on its advisory board. The duties tentatively include a monthly online meeting during the University of Nebraska school year and a in-person meeting once an academic year. If you are in the vicinity of eastern Nebraska and willing to serve, please contact Karen Coen-Brown at *kcoenbrown3@unl.edu* or phone her at 402-472-4507 for more details.

To join an alumni chapter, contact the Director of Alumni Affairs, Tricia Gomulinski, at *tricia@tbp.org*.

SMOKIES PICNIC

Members of the **Great Smoky Mountains Alumni Chapter** and **Tennessee Alpha** gathered in Knoxville, TN, for their sixth annual picnic to kick-off the fall semester. They enjoyed great weather, plenty of food, and good conversation. Among those in attendance were Jim Froula, ΤΒΠ Secretary-Treasurer Emeritus, front right, and Terry Olberding, 2017 Distinguished Alumni, back right.

Brain Ticklers

RESULTS FROM SPRING

Perfect

Beckham III, C. Lee	IN	B	'86
Bohdan, Timothy E.	IN	Γ	'85
Couillard, J. Gregory	IL	A	'89
*Gerken, Gary M.	CA	H	'11
*Griggs Jr., James L.	OH	A	'56
*Gulian, Franklin J.	DE	A	'83
Gulian, Joseph D.	Son of member		
Heske III, Theodore	PA	A	'86
*Norris, Thomas G.	OK	A	'56
Norris Jr., Thomas G.	PA	Γ	'79
*Schmidt, V. Hugo	WA	B	'51
*Slegel, Timothy J.	PA	A	'80
*Strong, Michael D.	PA	A	'84

Other

Alexander, Jay A.	IL	Γ	'86
Aron, Gert	IA	B	'58
Celani, Paul E.	MD	Γ	'97
Christiansen, Reed L.	MN	A	'83
Dechman, Don A.	TX	A	'57
Ellis Jr., Ira T.	PA	H	'56
Janssen, James R.	CA	Γ	'82
Johnson, Roger W.	MN	A	'79
Jones, John F.	WI	A	'59
Jones, Jeffrey C.	Son of member		
Jordan, R. Jeffrey	OK	Γ	'00
Krischer, Ari Y.	NY	Δ	'19
Lalinsky, Mark A.	MI	Γ	'77
McHenry, S. Dale	MO	B	'81
Parks, Christopher J.	NY	Γ	'82
Penlesky, Richard J.	WI	B	'73
Richards, John R.	NJ	B	'76
Riedesel, Jeremy M.	OH	B	'96
Rigge, Paul J.	MI	Γ	'12
Sigillito, Vincent G.	MD	B	'58
*Spong, Robert N.	UT	A	'58
Summerfield, Steven L.	MO	G	'85
Voellinger, Edward J.	Non-member		
*Wells, Alan T.	RI	B	'16

*Denotes correct bonus solution

SPRING REVIEW

The Spring regular problems appear to have been a relatively easy set with an average of 85% correct answers. The easiest regular problem was No.1 about the 5 nine-digit numbers; and the most difficult was No. 2 about the probability of a particular bridge hand. Regarding the Spring Bonus, the judges goofed and published an incorrect answer based on the assumption that the center of gravity (COG) of the cone was coincident with the center of mass (COM). However, this is true only if the gravity field is uniform. This approach gives g_a=2.75 m/s² and g_b=24.8 m/s². The correct approach is to set up an equation giving the gravitational force between a particle of mass of the cone and its apex or base point and calculating the total gravitational force by triple integration, similar to the method presented for calculating the COM of the cone in the incorrect solution in the Summer column. This approach gives g_a=3.92 m/s² and g_b=9.49 m/s². The judges apologize for any inconvenience this may have caused.

SUMMER ANSWERS

1 They arrive at **1:00 pm.** The two family members each walk exactly the same distance as the other rides. Let w_d and w_f be the distances that the daughter and father each walk the first half of the trip. Then $w_d / 8 + w_f / 16 = w_d / 16 + w_f / 6$. Since $w_f = 32 - w_d$, rewrite the equation as $w_d / 8 + (32 - w_d) / 16 = w_d / 16 + (32 - w_d) / 6$. Simplifying gives $w_d = 20$ km and $w_f = 12$ km. In the first half, the daughter walks for 2½ hours and rides ¾ hours, the father walks 2 hours and rides 1¼ hours. Each half takes 3¼ hours plus ½ hour rest for a total trip of 7 hours.

2 The smallest number has **99** consecutive 6's. Let S(n) be the integer made up of n consecutive 6's in base ten notation. S(0) = 0, S(1) = 6_{10} = 6_{16}, S(2) = 66_{10} = 42_{16}, S(3) = 666_{10} = $29A_{16}$ and so forth. $S(n) = 6 \Sigma_{i=0}^{i-1}(10^i) = 2(3) \Sigma_{i=0}^{i-1}(2^i 5^i)$. Recursively, $S(n) = S(n-1) + 6(10^{n-1}) = S(n-1) + 3(2^n)(5^{n-1})$. The factor 2^n in the second addend ensures that the lower n bits of S(n) are identical to those in S(n–1). Each additional 6 prepended to the base 10 representation of S(n) makes invariant one additional least significant bit; it follows that every four 6's makes a hexit invariant. S(3) ends with one A, S(7) ends with two A's, and by induction S(99) ends with 25 A's.

3 The two numbers are **5** and **14.** This simple algebra problem can be represented by two equations. First, $2l = 5s + 3$ or $4l = 10s + 6$. Second, $4l + 3s = 71$, which can be rewritten as $4l = -3s + 71$. Combining the two gives $13s = 65$, giving $s = 5$ and $l = 14$.

4 There are **201** people, and **19999** turnips in the original pile. Let T be the number of turnips. Call N the number of people, and since the quotient T/N is between 99 and 100 but closer to 99, we can write $99 < T/N < 99.5$ or $198N < 2T < 199N$. The second constraint that the number of turnips divided by 100 is closer to N than the number of turnips divided by 99, that is, $(N - T/100) < (T/99 - N)$, or $19800N < 199T$, provides a tighter lower bound than the first constraint. Combining the two, we get the bounds $39600N < 398T < 39601N$. N must be odd, because if N is even, there's no T that strictly meets the less-than upper bound. And for odd $N <= 199$, no integer T fits both bounds. $N = 201$ gives $T = 19999$. The next higher $N = 203$ gives $T = 20197$ which is too large.

5 **Friday** is the day least likely to form a pair from the first three socks chosen. However, **Saturday** is the day which requires the greatest number of draws of the three socks to make a pair.

On a given day, a drawer is characterized by the distribution of the number of socks of each color it contains. Consider a drawer with n_0, n_1, and n_2 socks. Let $n_{tot} = n_0+n_1+n_2$. Three socks can be randomly drawn in C(n_{tot}, 3) ways, where C stands for the Choose function. A selection by the uncle can pick exactly one sock of each color in $n_0 n_1 n_2$ ways. Therefore, the probability of not drawing a pair is $q = n_0 n_1 n_2 /$ C(n_{tot}, 3).

Let p be the probability of getting a match on the first draw, that is, $p = 1-q$. The expected number of selections is

$E = p(1 + 2q + 3q^2 + 4q^3 + \ldots)$ which simplifies to $E=1/p$ for $0 < p <= 1$.

On Monday, prior to a draw, there are 16 socks and the drawer has only one possible configuration $(n_0, n_1, n_2) = (8,6,2)$. For this configuration, $q=6/35$, $p=29/35 \cong 0.8286$, and $E=35/29 \cong 1.2069$.

On Tuesday, there are 14 socks and they can be distributed in three different ways: (6,6,2), (8,4,2) and (8,6,0). The likelihood of each possible Tuesday distribution can be calculated from Monday's distribution. That is, the probability of drawing a match when there are n_i socks on Monday is $(C(n_i, 3) + C(n_i, 2)C(n_{tot}-n_i, 1)) / (C(n_{tot}, 3) - n_0 n_1 n_2)$.

The first term in the numerator is the ways all three socks can match and the second term is the ways two socks can match times the ways the third sock can be picked. The first term in the denominator is the total ways that three socks can be drawn; the second term is the ways three socks can be picked with no match, so the equation gives the probability of getting a pair of socks of a given color.

Specifically, on Tuesday, the (6,6,2), (8,4,2), and (8,6,0) distributions occur with frequencies 35/58, 85/232, and 7/232, respectively. Calculate p and E for each distribution, scale by their rate of occurrence, and for Tuesday, the probability of match on the first draw is $2154/2639 \cong 0.8162$ and the expected number of draws is $38962/31755 \cong 1.2270$.

Continue for Wednesday, Thursday, Friday, and Saturday. Calculations are made less tedious if one observes that because the uncle only cares about making a match, but not the color of the matching socks, two distributions can be considered the same if the sock counts match independent of color. Also, observe that all configurations with a zero n_i can be treated identically, having $p = 1$ and $E = 1$.

The following table illustrates match on first draw probabilities and expected number of draws for each day, to four decimal places:

Day	Match	Expected
Mon	0.8286	1.2069
Tue	0.8162	1.2270
Wed	0.8027	1.2511
Thu	0.7892	1.2801
Fri	0.7805	1.3074
Sat	0.7849	1.3586

Surprisingly, the chances of matching dips on Friday below the other days, while Saturday predicts the highest number of expected draws. The calculations are clearly easier with a program, spreadsheet, or calculator, but are possible using rational fractions. The exact Friday match probability is 698897/895491, and the actual Saturday expected value is 36497826/26864730.

Bonus The judges found that the blue die can beat white in as little as ⅓ of the time. One possible number distribution is **blue** has **6, 7, 8, 9, 23, 24; green** has **3, 4, 5, 20, 21, 22; red** has **1, 2, 16, 17, 18, 19; white** has **10, 11, 12, 13, 14, 15.** Note the symmetry of the solution. Each die beats the next one ⅔ of the time, so there are three other solutions, found by rotating the sets of six numbers through the four dice.

Suppose a fifth, amber colored die was introduced that beat blue ⅔ of the time. We could number the thirty faces⅓ 1 through 30 as follows: amber 10, 11, 12, 13, 14, 15; blue 6, 7, 8, 9, 29, 30; green 3, 4, 5, 26, 27, 28; red 1, 2, 22, 23, 24, 25; white 16, 17, 18, 19, 20, 21. Curiously, each die would beat the succeeding one ⅔ of the time, but amber never beats white.

Double Bonus A two spot game can end in **19** different ways. In two spot Sprouts, there are initially six lives, three for each of the original spots. Each player's turn decreases the life of each connected spot by one, but adds one at the newly drawn spot. Two-spot Sprouts determines a winner in four or five moves. There is one initial configuration, two after one move, six after two, 11 after three, 17 after four (of which five are final), and 14 after five (all final). A deeper analysis of Sprouts, as well as a diagram of the complete two spot game tree can be found in *Computer Analysis of Sprouts* by Applegate, Jacobson, and Sleator.

NEW FALL PROBLEMS

1 Solve this cryptic addition with the usual rules: different letters are different digits, same letter is same digit, no leading zeros, base 10: SIXTEEN + TWENTY + TWENTY + TEN + TWO + TWO = SEVENTY.

—*Journal of Recreational Mathematics*

2 Hook, Line, and Sinker returned from a day's fishing, and each reported his catch secretly, but accurately, to George Gaff, landlord of The Complete Idiot. "Well, Gents," George announced later. "Hook caught the most fish, and Sinker caught the fewest (no ties). If you divide Hook's catch by Sinker's catch, you get Line's catch."

Upon reflection, Hook remarked, "I know how many fish each of us caught."

Line then chimed in with, "I also know how many each of us caught."

"But I don't know," Sinker complained after a short pause.

"Never mind, Old Chap," said George. "I'll give you a clue. I've been fishing, too, and I caught fewer fish than Hook. If you know how many I caught, you can figure out how many fish Line caught." Without further help, Sinker managed to work out Line's catch. Sinker was proud of himself and remarked that it had been a good day, since his catch was twice what he had caught the previous week. How many fish did Hook, Line, and Sinker each catch?

—A Tantalizer by Martin Hollis in *New Scientist*

3 In how many different ways (order does not matter) can one change a $100 bill using $1, $2, $5,

$10, $20, and $50 bills?

—*Challenging Mathematical Problems with Elementary Solutions* by A.M. & I.M. Yaglom

4 What is the maximum number of queens that can be placed on an 8x8 chessboard so that each queen threatens (that is, could capture on the next move) exactly two other queens? A queen can move horizontally, vertically, or diagonally as many squares as desired or until another piece or the edge of the board is encountered. Using Q's and -'s, provide an 8x8 grid that represents the chess board.

—*The Colossal Book of Mathematics* by Martin Gardner

5 The There'sAPillForEverything Pharmaceutical Company received a shipment of 12 bottles of pills, each bottle containing 1,000 pills. The labels on the bottles indicated that each pill weighed 100 mg. However, before any pills had been sold, the pharmacist received a notice from the supplier that the manufacturer had some problems, and some of the pills might weigh 110 mg. However, if a 110 mg pill was found in a bottle, all the pills in that bottle would weigh 110 mg. The pharmacist has an ordinary pan scale that is accurate to 1 mg. What is the minimum number of weighings of pills from the various bottles required to determine which bottles, if any, contain pills weighing 110 mg? Explain how the weighings are to be carried out. The pan on the scale can hold at most 24 pills at the same time. Pills on the scale can be identified as to which bottle they came from.

—*The Crucible*

Bonus Two positive integers with no common integer factor (other than one) are selected. Their sum is written on the forehead of logician A and the sum of their squares is written on the forehead of logician B. The two logicians are allowed to see the numbers on each-other's foreheads. The following conversation takes place.

A (sees sum of squares): I don't know my number.
B (sees sum): I don't know my number.
A: I don't know my number.
B: I don't know my number.
A: I don't know my number.
B: I don't know my number.
A: I don't know my number.
B: I don't know my number.
A: I know my number.
What are the numbers on A's and B's foreheads?

—**Richard I. Hess,** *CA B '62*

Computer Bonus Find five different positive integers such that the sum of any two of them is a perfect square.

—Allan Gottlieb's Puzzle Corner in *Technology Review*

Postal mail your answers to any or all of the Brain Ticklers to **Tau Beta Pi, P. O. Box 2697, Knoxville, TN 37901-2697** or email to *BrainTicklers@tbp.org* as plain text only. The cutoff date for entries to the Fall column is the appearance of the Winter *Bent* which typically arrives in late December (the digital distribution is several days earlier). The method of solution is not necessary. We welcome any interesting problems that might be suitable for the column. The Computer Bonus is not graded. Entries will be forwarded to the judges who are **H.G. McIlvried III,** *P A Γ '53*; **J.C. Rasbold,** *OH A '83*, **J.R. Stribling,** *CA A '92*; and the columnist for this issue,

—F.J. Tydeman, *CA Δ '73*

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TELL US THE TALE...WIN A T-SHIRT!

SEND US your best captions for this great picture from Tau Beta Pi's photo archives. If yours is judged one of the best, and you have *not* been a previous t-shirt winner, we will send you a ΤΒΠ t-shirt of your choice!

The picture, right, appeared in the Winter 1979 issue and shows Elbert L. Sneed Jr., *OK Γ '79*, chapter president, and Cecelia A. Ingram, *OK Γ '80*, chapter vice president, as they discuss the use of a programmable calculator at an Oklahoma Gamma calculator learning session.

Submit your entries to *pat@tbp.org* or mail them to HQ by Monday, November 5, 2018.

The Summer Caption Contest photo, below, which appeared on the cover of the Summer 1979 issue of *The Bent*, shows students at the University of Alabama's Engineering Open House reacting to an experiment conducted by Alabama Gamma president Joseph J. Hanby, *AL Γ '79*.

The judges reviewed 27 captions submitted by 19 readers. Two of the captions tied for first place:

"Yes, if you become an engineer, you'll be able to make the entire Auburn football team disappear, just like this!" from Drake R. Kijowski, *IN A '76*, and

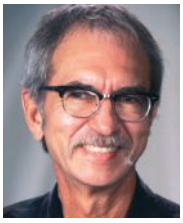
"Didn't our calculation say that the egg would go the other direction?" by David W. Kortebein, *IL A '85*. Drake and David are previous t-shirt winners, so the shirts will be awarded to the creators of our second and third place captions:

"That is exactly why I chose engineering over science!" submitted by Steven T. Kuennen, *CO Z '86*, and "From guy on left 'Man, I wish he could make my last Thermo test grade disappear.'" from William C. "Chris" Holliday, *TN E '85*.

Thanks again to all of you who participated in the contests!

Alabama Beta

B. Allan Massey, '74, has been granted U.S. Patent No. 9,770,682 for an innovative approach to improve respirable air quality for rotary drill operators in surface mining and construction. The system removes constraints on locating an air intake near the top of the drill mast to access cleaner air, while allowing raising and lowering of the mast system.



California Zeta

Brahmani Nara, '09, is executive director of Heritage Food Ltd., one of the largest and fastest growing dairy companies in India. Before joining Heritage, Nara worked at Vertex Venture Management, a subsidiary of Temasek Holdings, as the youngest member of the investment team, focused on growth equity investments. She also pursued a marketing internship program at Danone, Paris, and Danone Baby Nutrition, Schipol, while pursuing her MBA.

Illinois Alpha

Gregory M. Wilkins, Ph.D., '92, has been appointed professor of practice with the department of electrical and computer engineering at Morgan State University in Baltimore, MD. He joined the faculty in 1994 and has developed and teaches courses at both the undergraduate and graduate levels. Wilkins also serves as Chief Advisor for the Maryland Epsilon Chapter.

Indiana Beta

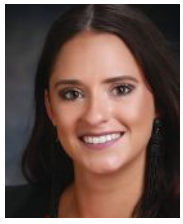
David S. Fisher, Ph.D., '00, is using a 2018-19 Fulbright Scholarship to travel to Ireland's University of Limerick. The Rose-Hulman Institute of Technology professor will study how the school has successfully attracted and retained female computer science students and faculty. While in Limerick, Fisher also will teach courses in software development and assist the university in its youth education outreach efforts.

Indiana Epsilon

Amanda R. Cope, P.E., '06, has become the city engineer for Angola, IN. She joined the city as pre-treatment coordinator with the wastewater department in 2012. In addition, Cope serves as an assistant track & field coach at Trine University.

Louisiana Delta

Bliss Kelley Bernard, P.E., '14, has fulfilled the required four years of work experience under a licensed engineer and passed her P.E. exam to achieve this career milestone. She is an engineer at Fenstermaker where she has worked on a variety of engineering projects, including environmental planning, traffic engineering, and roadway design.



Maryland Alpha

E.F. Charles (Chuck) LaBerge, Ph.D., '74, was named initial recipient of the University of Maryland, Baltimore County, college of engineering and information technology's award for teaching excellence. He recently completed 10 years as professor of the practice of computer science and electrical engineering. Previously, LaBerge worked in research for Honeywell and predecessor companies, retiring as a senior fellow for communications and signal processing. He is an Advisor to Maryland Delta.

Massachusetts Beta

Kurt L. Glitzenstein, Esq., J.D., '88, has been named a "Litigation Trailblazer" by *The National Law Journal* for "his pioneering work developing cost-effective, winning litigation strategies using alternative fee arrangements." Glitzenstein is a principal at Fish & Richardson as a litigation practice group leader. He oversees the intellectual property and commercial litigation practices. His bachelor's and master's degrees are in mechanical engineering.

Massachusetts Iota

Richard H. Kosakowski, Esq., J.D., '86, has joined the intellectual property law firm of Ware, Fressola, Maguire & Barber LLP as partner. He counsels clients in all aspects of IP law and has 30 years of experience preparing and prosecuting U.S. and foreign patent applications. He is a former

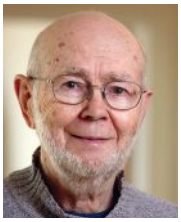
chief IP counsel for the Pratt & Whitney and Hamilton Sundstrand business units of United Technologies Corporation.

Michigan Alpha

Katy Luchini-Colbry, Ph.D., '99, has become assistant dean for graduate student services at Michigan State University's college of engineering. She will work on recruiting, mentoring, fostering an environment to grow resources, fellowship administration, and other day-to-day aspects of growing the graduate program. Colbry has spent the past eight years involved in the program. She is ΤΒΠ Director of Engineering Futures and Chief Advisor of Michigan Alpha.

Mississippi Alpha

W. Lester S. Andrews, Ph.D., '63, was honored by a Festschrift (collection of writings) in the *Journal of Physical Chemistry*. He has published more than 865 papers on matrix isolation spectroscopy of reactive molecules, complexes, cations, and anions investigated mostly by infrared absorption spectroscopy and quantum chemical calculations. Andrews is a research active professor emeritus at the University of Virginia.



Mississippi Beta

Dana N. "Nikki" Reinemann-Goss, Ph.D., '12, has joined the University of Mississippi faculty as an assistant professor of chemical engineering as part of the new biomedical engineering program. The Ole Miss alumna received her Ph.D. in chemical and biomolecular engineering from Vanderbilt University. Research interests include probing the intersection of biology, physics, and engineering by investigating higher-level cytoskeletal architecture and its motor proteins.

Missouri Beta

Thomas R. Voss, P.E., '69, has received an honorary engineering doctorate from the Missouri University of Science and Technology. He is the former CEO of Ameren Corp. and was recently appointed to the University of Missouri System board of governors. Voss has also been appointed to an advisory council to help the Puerto Rico power authority.

Oregon Gamma

Christopher A. Hampel, '18, was valedictorian of the University of Portland Class of 2018. He received the highest scholastic achievement award and the Tau Beta Pi Engineering Honor Society Award of the school of engineering, and was president of his ΤΒΠ chapter. He conducted undergraduate research in heat transfer while majoring in mechanical engineering. Hampel plans to pursue a master's degree at Colorado School of Mines in mechanical engineering.

Tennessee Beta

Col. Todd M. Graham, P.E., '96, has assumed command of the 235th Civil Engineer Flight, 175th Wing, Warfield Air National Guard Base, Maryland Air National Guard. He is responsible for delivery of engineering capability to the Joint Chief of Staff, Headquarters Air Force Director of Civil Engineers, and Headquarters European Command. In his civilian life, Graham is a principal in Booz Allen Hamilton's defense infrastructure and environment team, based in McLean, VA.

Texas Delta

Denise M. Martinez, Ph.D., '90, has become associate dean of Tarleton State University's new school of engineering. She had been head of Tarleton's department of engineering and computer sciences since 2013, after joining the faculty in 2001. The new school is part of the college of science and technology at Tarleton, a member of the Texas A&M University System.

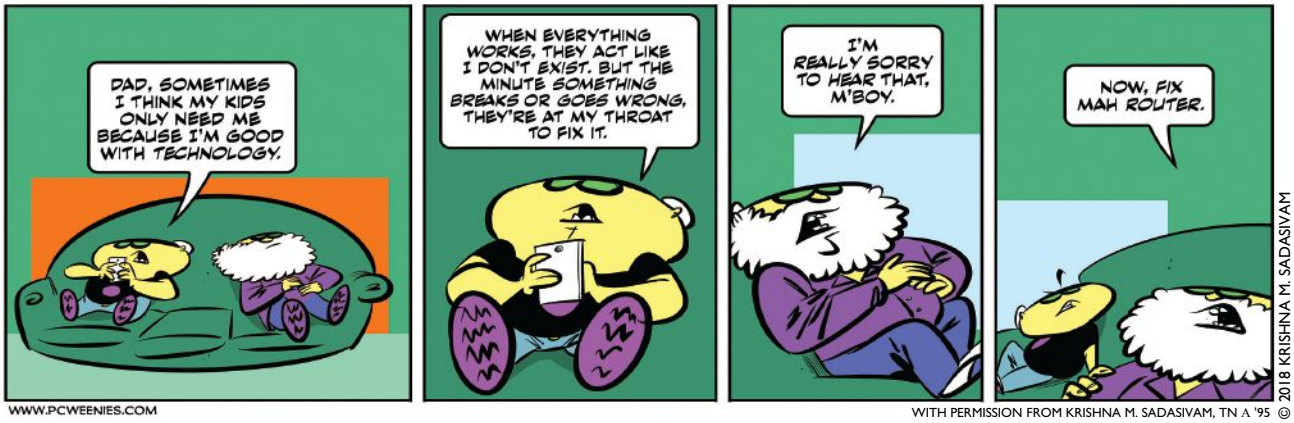
Virginia Alpha

Robert J. Mattauch, Ph.D., '62, has received the 2018 Microwave Pioneer Award of the IEEE Microwave Theory and Techniques Society. He is dean emeritus of the Virginia Commonwealth University school of engineering and the founding chair of the department of electrical and computer engineering there. The award is given for a career of achievement and contribution in the field of microwave theory and techniques.

Write Your Own Note!

Your fellow Tau Bates are interested in news about you. Send items about civic activities, honors won, weddings, births, promotions, changes in address, etc. to Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or to *alumnote@tbp.org*. Material for publication must be received for the **Spring** issue by February 1, **Summer** issue by May 1, **Fall** issue by August 1, and **Winter** issue by November 1. Include name, address, chapter, class year, and email address or phone number. Thank you!

The PC Weenies



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- **Local Hospitality**—access to a worldwide inventory of hotels at exclusively discounted rates.
- **TBP4Life**—a private community mobile app and web platform for mentoring & networking opportunities [tbp.vineup.com/].
- **SIRVA Home Benefits**—discounts on real estate, mortgages, and moving services.
- **PPI**—discounts on professional licensing exam review materials (FE/EIT, PE, LEED, & more).
- **TBP Job Board**—post a resume online and browse through hundreds of engineering jobs at top companies.

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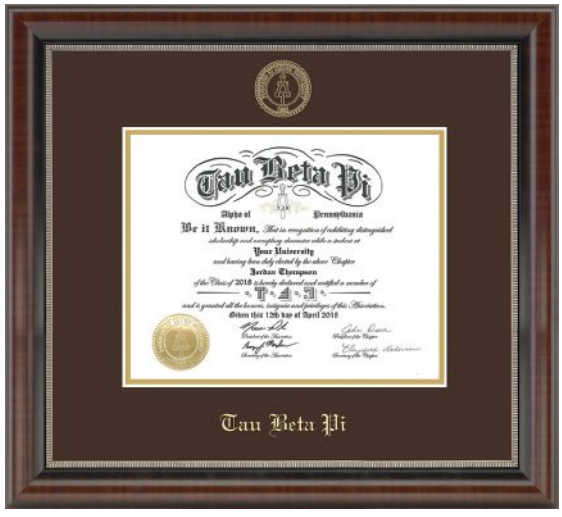

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