

THE BENT

OF TAU BETA PI

The Engineering Honor Society

Winter 2014



**‘Elevating’ TBP
2013 Convention
EF: The Lowdown**



CHAPTERS

ALUMNI CHAPTERS (67)

District 1 • denotes active chapter

- Boston, MA
- Central Connecticut, Hartford
- District 2**
- Buffalo, NY
- Central Jersey, NJ
- Long Island Suburban, NY
- Newark, NJ
- New York, NY
- New York Capital District, NY
- Rochester, NY
- Southern Tier, Binghamton, NY
- District 3**
- Lehigh Valley, Bethlehem, PA
- Philadelphia, 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
- Huntsville, AL
- Louisville, KY
- Mid-South, Memphis, TN
- District 7**
- Ann Arbor Area, MI
- Central Michigan, Lansing
- Cincinnati, OH
- Dayton, OH
- Southeastern Michigan, Detroit
- Flint, MI
- Ohio's North Coast, Cleveland
- Columbus, OH
- West Michigan, Grand Rapids
- District 8**
- Chicago Area, IL
- Central Illinois, Urbana-Champaign
- Milwaukee, WI
- District 9**
- Rolla, MO
- St. Louis, MO
- District 10**
- Texas Gulf Coast, Houston
- District 11**
- Ames, IA
- Minnesota, Twin Cities, MN
- District 12**
- Colorado Springs, CO
- Front Range, CO/WY
- Salt Lake City, UT
- Treasure Valley, Boise, ID
- District 13**
- El Paso, TX
- Phoenix, AZ
- Sun City, AZ
- District 14**
- Columbia River Basin, Richland, WA
- Portland, OR
- Puget Sound, Seattle, WA
- District 15**
- Sacramento, CA
- San Francisco Bay Area, CA
- San Francisco Peninsula, Palo Alto, CA
- District 16**
- Southern California, Los Angeles

COLLEGIATE CHAPTERS (248)

- | Chap. Dist. | Institution |
|-------------|---|
| AL A 6 | Auburn Univ. |
| AL B 6 | Univ. of Alabama |
| AL G 6 | Univ. of Ala. at Birmingham |
| AL A 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 G 13 | Northern Arizona Univ. |
| AR A 9 | Univ. of Arkansas |
| CA A 15 | Univ. of California, Berkeley |
| CA B 16 | California Inst. of Technology |
| CA G 15 | Stanford Univ. |
| CA A 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 O 16 | California State Univ., Long Beach |
| CA I 16 | California State Univ., Los Angeles |
| CA K 16 | California State Univ., Northridge |
| CA A 15 | Univ. of California, Davis |
| CA M 15 | Calif. Poly. St. Univ., San Luis Obispo |
| CA N 16 | California State Poly. Univ., Pomona |
| CA Z 16 | San Diego State Univ. |

- | | |
|----------|--|
| CA O 16 | Loyola Marymount Univ. |
| CA P 16 | Northrop Univ. (inactive) |
| CA P 16 | California State Univ., Fresno |
| CA S 15 | Univ. of California, Santa Barbara |
| CA T 16 | Univ. of California, Irvine |
| CA Y 15 | California State Univ., Sacramento |
| CA O 16 | Univ. of the Pacific |
| CA X 16 | California State Univ., Fullerton |
| CA Y 16 | Univ. of California, San Diego |
| CA O 16 | Harvey Mudd College |
| CA AA 15 | California State Univ., Chico |
| CA AB 16 | Univ. of California, Riverside |
| CA AF 15 | San Francisco State Univ. |
| CA AA 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 G 12 | Univ. of Denver (inactive) |
| CO A 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 G 1 | Univ. of Hartford |
| DE A 3 | Univ. of Delaware |
| DC A 4 | Howard Univ. |
| DC B 4 | Catholic Univ. of America |
| DC G 4 | George Washington Univ. |
| FL A 5 | Univ. of Florida |
| FL B 5 | Univ. of Miami |
| FL G 5 | Univ. of South Florida |
| FL A 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 O 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 G 12 | Boise State Univ. |
| IL A 8 | Univ. of Illinois at Urbana-Champaign |
| IL B 8 | Illinois Inst. of Technology |
| IL G 8 | Northwestern Univ. |
| IL A 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 G 8 | Univ. of Notre Dame |
| IN A 8 | Valparaiso Univ. |
| IN E 8 | Trine Univ. |
| 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 G 9 | Kansas State Univ. |
| KY A 6 | Univ. of Kentucky |
| KY B 6 | Univ. of Louisville |
| KY G 6 | Western Kentucky Univ. |
| LA A 10 | Louisiana State Univ. |
| LA B 10 | Tulane Univ. of Louisiana |
| LA G 10 | Louisiana Tech Univ. |
| LA A 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 G 4 | United States Naval Academy |
| MD A 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 G 1 | Harvard Univ. (inactive) |
| MA A 1 | Tufts Univ. |
| MA E 1 | Northeastern Univ. |
| MA Z 1 | Univ. of Massachusetts at Amherst |
| MA H 1 | Boston Univ. |
| MA O 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 G 7 | Univ. of Michigan |
| MI A 7 | Univ. of Detroit Mercy |
| MI E 7 | Wayne State Univ. |
| MI Z 7 | Kettering Univ. |
| MI H 7 | Lawrence Technological Univ. |
| MI O 7 | Oakland Univ. |
| MI I 7 | Univ. of Michigan-Dearborn |
| MI K 7 | Western Michigan Univ. |
| MI A 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 G 9 | Washington Univ. |
| MO A 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 G 2 | New Jersey Inst. of Technology |
| NJ A 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 G 13 | New Mexico Inst. of Mining & Tech. |
| NY A 2 | Columbia Univ. |
| NY B 2 | Syracuse Univ. |
| NY G 2 | Rensselaer Polytechnic Inst. |
| NY A 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 O 2 | Clarkson Univ. |
| NY I 2 | Cooper Union School of Engineering |
| NY K 2 | Univ. of Rochester |
| NY A 2 | Pratt Inst. (inactive) |
| NY M 2 | Union College |
| NY N 2 | SUNY at Buffalo |
| NY E 2 | Manhattan College |
| NY O 2 | SUNY at Stony Brook |
| NY P 2 | Rochester Inst. of Technology |
| NY P 2 | Polytechnic Institute of New York Univ. |
| NY S 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 G 4 | Duke Univ. |
| NC A 4 | Univ. of North Carolina at Charlotte |
| NC E 4 | North Carolina A&T State Univ. |
| 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 G 7 | Ohio State Univ. |
| OH A 7 | Ohio Univ. |
| OH E 7 | Cleveland State Univ. |
| OH Z 7 | Univ. of Toledo |
| OH H 7 | Air Force Inst. of Technology |
| OH O 7 | Univ. of Dayton |
| OH I 7 | Ohio Northern Univ. |
| OH K 7 | Univ. of Akron |
| OH A 7 | Youngstown State Univ. |
| OH M 7 | Wright State Univ. |
| OH N 7 | Cedarville Univ. |
| OH E 7 | Miami Univ. |
| OK A 9 | Univ. of Oklahoma |
| OK B 9 | Univ. of Tulsa |
| OK G 9 | Oklahoma State Univ. |
| OR A 14 | Oregon State Univ. |
| OR B 14 | Portland State Univ. |
| OR G 14 | Univ. of Portland |
| PA A 3 | Lehigh Univ. |
| PA B 3 | Pennsylvania State Univ. |
| PA G 3 | Carnegie Mellon Univ. |
| PA A 3 | Univ. of Pennsylvania |
| PA E 3 | Lafayette College |
| PA Z 3 | Drexel Univ. |
| PA H 3 | Bucknell Univ. |
| PA O 3 | Villanova Univ. |
| PA I 3 | Widener Univ. |
| PA K 3 | Swarthmore College |
| PA A 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 G 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 G 6 | Tennessee Tech. Univ. |
| TN A 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 G 10 | Rice Univ. |
| TX A 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 O 13 | Univ. of Texas at El Paso |
| TX I 10 | Southern Methodist Univ. |
| TX K 10 | Prairie View A & M Univ. |
| TX A 10 | Texas A & M Univ.-Kingsville |
| TX M 10 | Univ. of Texas at San Antonio |
| UT A 12 | Univ. of Utah |
| UT B 12 | Brigham Young Univ. |
| UT G 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 G 4 | Old Dominion Univ. |
| VA A 4 | Virginia Military Inst. |
| VA E 4 | Virginia Commonwealth Univ. |
| WA A 14 | Univ. of Washington |
| WA B 14 | Washington State Univ. |
| WA G 14 | Seattle Univ. |
| WA A 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 G 8 | Univ. of Wisconsin-Milwaukee |
| WI A 8 | Milwaukee School of Engineering |
| WI E 8 | Univ. of Wisconsin-Platteville |
| WY A 12 | Univ. of Wyoming |

the Bent of

Winter 2014
Vol. CV / No. 1

*f*ounded 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 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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ON THE COVER:
The 'Elevate' slate are now the Executive Council-elect. They are, from left, Norman Pih, Tennessee Alpha '82; Alan J. Passman, Florida Alpha '06; Susan L.R. Holl, Ph.D., California Lambda '76; Joseph P. Blackford, DC Gamma '95; and George J. Morales, Ph.D., Florida Epsilon '06.
Cover artist: Dali Polivka



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Tau Beta Pi:
THE BENT



Editor: Curtis D. Gomulinski, MI E '01 Editorial Assistant: David S. Roberts
Editorial Board: Dr. Lyle D. Feisel, P.E., IA A '61; Samuel C. Florman, P.E., NY A '44; and Dr. John W. Prados, P.E., TN A '54

The Bent of Tau Beta Pi® (ISSN 0005-884X) is published quarterly for \$10 per year by The Tau Beta Pi Association, Inc., Room 508, Dougherty Hall, The University of Tennessee, Knoxville, Tennessee 37996-2215; www.tbp.org; FAX 865/546-4579; email: tbp@tbp.org. Life subscriptions are \$75. Printed in U.S.A. Periodicals postage paid at Knoxville, TN, and at additional mailing offices. SUBSCRIBERS and POSTMASTER: Send address change, request for online subs., & other correspondence to tbp@tbp.org or to: The Bent of Tau Beta Pi / P.O. Box 2697 / Knoxville, TN 37901-2697. Telephone: 865/546-4578

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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

Convention Reflections

We had a very successful Convention hosted by Iowa Alpha! For those who were not able to attend, I proffer this summary. Convention saw 559 member attendees, the most ever, with 226 of our 241 chapters represented. The largest number of Alumni Chapters attend this year as well, 20 in total. With these high numbers, I see the Convention as a barometer of the success of the Association as a whole.

For Tau Beta Pi to grow in its service to its members, we must turn back and critically look at what could have been better. The Executive Council is privy to the post-convention feedback, 20% of which is critical. I do view the convention as a success, yet I do give pause and thought to the critical comments to seek knowledge in their points of view.

Here are a few criticisms and my retrospection:

The Convention schedule was altered to fit in a few new events, i.e. the 17 Professional Development sessions, the movie Pandora's Promise, the opening costume social on Halloween. Some people commented that the schedule was too packed. TBPi is rounding the corner to face the fact that the Convention business, district meetings, and Interactive Chapter Exchange (ICE) sessions require 2.5 days and anything added is like stuffing those springy snakes into a flimsy top tennis ball can. There's a maximum limit before chaos flies at your face.

Convention is evolving to span 3 or 3.5 days. If we look at other professional associations, the draw of any event should be the benefit to its attendees. TBPi aims to move toward more diverse development programs for the benefit of all our members who strive to be future leaders. We do not yet have the perfect formula, yet each empirical trial directs and corrects the course.

Several comments were critical of the business meetings. Concerns included a few people taking advantage of Roberts Rules, thrusting decisions on students who have no Convention experience, and even the hasty voting on rumbling stomachs. TBPi is one of the rare associations where the students have the majority of the voting rights. Please imagine a room of alumni, probably out of school for about 25 years, deciding how all the chapters should operate. The senior members of our Association are intelligent, yet most alumni are not involved with chapters on a regular basis. It is unwise for any alumni group to say they know what affects every student chapter in our Association. The democracy of the Convention is a unique model of self-rule, more ideal than our U.S.

government. As laborious and tedious as the business meetings are, we hope that the everyone gains some knowledge of the ideas behind TBPi and the governance of large assemblies so all voices are heard.

Roberts Rules of Order is oft criticized as a tool for the few to manipulate the many. Our Convention's process by Roberts Rules is similar to congressional



operations, but not nearly as convoluted! View CSPAN one restless night to cure your insomnia and see Roberts Rules in full effect. Convention is a training ground for bigger more aggressive assemblies. Ron Hickling and Jim Johnson did an excellent job managing the individual questions and process flow of the assembly. This was viewing behind a safety glass before you enter an intimidat-

ing city council hearing, or a contentious student senate meeting. Take the knowledge where it will be needed in your life.

Committees with highly debatable topics should be able to offer a preview of their motions before the business meeting. This might be done electronically with emails to all voting delegates. We would also aim to incorporate time blocks where any voting delegate may enter that committee meeting for an input forum. This again requires more time of our convention schedule, yet the hope is to fine tune the business meeting process.

I have some last thoughts on the comments regarding the hotel and quality of food. TBPi cannot always control what a facility has to offer. Yet, we do our best to make sure everyone has comfortable accommodations and edible meals. I view hotel and food comments as a challenge to make Convention so stellar that sharing a hotel room and rubber chicken cutlets are minor side notes to the overall amazing experience that will be our Convention.

After reading this, you may think that Convention was a huge debacle...not so! As I indicated at the onset, 80% of the feedback we received relayed the positive aspects of Convention. We will use what went well along with the critical comments to make the 2014 Convention even better. Thank you to everyone who took the time to write post-convention comments.

—Solange C. Dao, P.E.,
Florida Alpha '95, Vice President

Celebrate Tau Beta Pi Day!



Join the fun; make *Pi Day* a national event for the Association!

Pi Day, March 14, is an annual celebration commemorating the mathematical constant π (Pi).

The Association is marking the occasion by encouraging chapters to host events on **Pi Day** and members to proudly wear their Bent, charm, or other Tau Beta Pi apparel.

Logo Design Voting: Dec. 16 – Jan. 12

Winning Design Announced: Jan. 15

New Apparel Orders Accepted: Jan. 15 – Feb. 2

Deliveries: Week of March 1

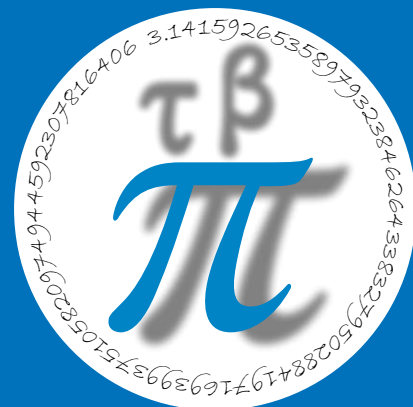
Pi Day: March 14

Write-ups & Picture submissions: March 31

For more information on Tau Beta Pi Day visit:

www.tbp.org/piday

Questions can be directed to dylan@tbp.org.



Tau Beta Pi Day



Departures, Arrivals, and Change

Between two and three thousand members of Tau Beta Pi pass away each year. This number will only increase as our larger initiation classes reach their golden years. We will continue to include our Chapter Eternal section in *The Bent* and appreciate the emails and letters notifying us when a member dies. This September we lost two “big names” in the organization’s recent history, Doug Green and John Luchini; short biographies of both appear on page 31. We also shared some of John’s final thoughts about the Engineering Futures Program on pages 14-18. Both men have a special place in my time as a member.

Doug served as President of Tau Beta Pi from 1998-2002, and I was among the first members to have his signature on my membership certificate. I met Doug during my first Convention (and his first as President) in Madison, WI. He presented my chapter its first ever Chapter Project Award, and the following day, he talked and took time for pictures with me and my fellow Michigan Epsilon members after we won the R.C. Matthews Award. Doug’s Council worked diligently over their four years to grow our newly established Scholarship Program, prepared the organization for international chapter petitions, and began work on the troublesome curriculum eligibility issue which plagued us for nearly a half-century. The contributions of Doug and the other members of the Mid-Atlantic Executive Council will continue to positively impact the Association for years to come. They also took a chance and appointed me as a District 7 Director!

John served in a variety of roles during his time with Tau Beta Pi, but I will always remember him as one of my Engineering Futures (EF) Facilitators. John led two of the EF sessions I participated in as a student. I especially remember his session on Analytical Problem Solving (APS) and the importance of brainstorming, thinking outside of the box, and list reduction. He relayed to us a problem his team at Cooper Tire had been dogged by for years. Although the possible solution had been on the table for a while, it was not seriously considered because it appeared to be unlikely and too complicated to address. After careful analysis and use of the techniques presented in APS, the team determined that the unlikely solution was the only possible one. This provided us with a real-world example of the practical nature of the techniques, and I’m pleased I’ve been able to use these problem solving methods in my professional career.

Student Advisory Board

I am pleased to report that we added a little over 9,200

members last year—the second highest in the last 15 years. While a couple thousand of them are currently

serving as leaders on the local level, we are looking for a few to help provide leadership on a national level. The Student Advisory Board was established last year and consists of nine students or recent graduates interested in working with me and the Executive Council to tackle issues facing the chapters. The group held its first in-person meeting at this year’s Convention and have outlined several initiatives to tackle over the next year: updates to

the *President’s Book* and identifying resources for small chapters. Interested members are invited to send an email and resume to tbp@tbp.org by January 3.



Subscription Prices

The Executive Council approved an increase to *The Bent* life subscription price to \$75 effective January 1, 2014. While we would prefer to keep the price at \$60, the increasing costs of printing and postage cannot be ignored. Through the prudent investment of the Life Subscription Fund and a careful eye on costs, this is the first increase since 1996. At the same time, we recognize that many new members are interested in receiving the magazine electronically; we now offer an electronic-only life subscription for \$40. Over the next year, we will be working to enhance our electronic version from its PDF-only format to a more interactive web-based version. An order form is available on page 20 or you can purchase a life subscription from the General Store website. Contact tbp@tbp.org if you have questions about purchasing a life subscription or converting to an electronic life subscription.

Until later,

EXECUTIVE COUNCIL MEETINGS

The Executive Council met via teleconference on May 15, 2013.

Christopher C. McComb, *CA P'12*, was appointed as a District 3 Director to a term ending June 2015.

The Council accepted Executive Director Gomulinski's 3rd quarter financial report; a proposal to have the IRS 990 completed by the auditor was approved; and the Major Gift Officer's April report was reviewed.

The Council discussed a member benefit proposal and requested input from the Student Advisory Board and Association Officials before taking further action.

Applications for the Director of Alumni Affairs were reviewed. The Council appointed five members to the Director of Alumni Affairs Selection Committee to interview and recommend a member for the position.

The Executive Council met in Colorado Springs, CO, on June 7, 2013.

The Council enthusiastically voted a TBPI Resolution of Appreciation to M.S. Ingber, *LA B '72*, for his service on the Outstanding Advisor Selection Committee. Two TBPI Distinguished Service Awards and one Resolution of Appreciation for three retiring District Directors were also approved.

The Council reviewed a request from alumni in the Central New Jersey area and granted them a charter for the Central Jersey Alumni Chapter.

Y. Yuan, *PA E '12*, was appointed as an Engineering Futures Facilitator to a term ending June 2016. The Council reappointed as District Directors for 2013-16: L.J. Swett, A.J. Rovnan, A.J. Flowerday, B.R. Buisson, J.C. Hill, J.G. Dabling, J.R. Burnett, S.E. Fable, and K.R. Stillmaker.

Councillor Pih summarized the discussions and decisions of the Trust Advisory Committee (TAC) meeting on May 15 in New York City. The Council accepted the report from TAC Chair R.F. Smith.

The Council established a Convention Delegates Fund using a \$20,000 gift from Energy XXI to support the Texas Delta Chapter's voting delegate. Additional gifts from donors wishing to support other chapters will be added to this fund.

Ellen S. Styles and Bruce A. DeVantier, members of the Laureate Selection Committee, reported that their group had selected five TBPI Laureates from 15 nominees. The selection of Bruce L. Walcott, *IN A '81*, as the 2013 Outstanding Advisor was accepted.

Councillor Huggins reported on the work of the Director of Alumni Affairs Selection Committee. The Council accepted the recommendations and appointed Tricia E. Gomulinski, *SD A '98*, as the Director of Alumni Affairs to a term ending June 2015.

The Council reviewed and accepted a proposal to have the Association celebrate Pi Day to help elevate the public's perception of Tau Beta Pi.



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Cyber Security
Digital Signal Processing
Electrical Engineering
Machine Learning and Computer Vision
Modeling and Systems Architecture
Physics

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For information about our schedule of on-campus information sessions and interview dates, please visit www.ll.mit.edu/college

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WHO'S WHO

Katherine J. "Jamie" Rogers, Ph.D., P.E., Missouri Alpha '79, has become 2013-14 president-elect of ABET.



She is professor and associate chair of industrial and manufacturing systems engineering at The University of Texas at

Arlington. Rogers began her ABET service as an evaluator for industrial engineering programs in 1991. Her predecessor, **Monte L. Phillips, Ph.D., P.E., North Dakota Beta '59**, has been installed as 2013-14 president. He is an emeritus professor of civil engineering at the University of North Dakota. **Michael R. Lightner, Ph.D., Colorado Beta '72**, has become ABET secretary. He is professor and chair of electrical, computer, and energy engineering at the University of Colorado at Boulder. He is co-director of the Rehabilitation Engineering Research Center for Advancing Cognitive Technologies, having spent the last 10 years focused on technology to assist the cognitively impaired.



C.D. "Dan" Mote Jr., Ph.D., California Alpha '59, pictured, has taken office for a six-year term as president of the National Academy of Engineering. He is past president of the University of Maryland and succeeds **Charles M. Vest, Ph.D., West Virginia Alpha**



M. Vest, Ph.D., West Virginia Alpha

'63. David E. Daniel, Ph.D., Texas Alpha '72, president of the University of Texas at Dallas, was elected to a three-year term on the academy council.

Stefan G. Humphries, M.D., Michigan Gamma '84, played football at the University of Michigan as part of a Rose Bowl winning team. He was drafted by the Chicago Bears, where he secured the offensive line as a guard in the 1985 Super Bowl championship team, considered by many as one of the greatest of all time. Humphries went on to play for the Denver Broncos. After five years of professional football, he went on to medical school. The physician with a Super Bowl ring now helps people overcome catastrophes as medical director at a rehabilitation hospital in Reno, NV.



John Byrne/Sparks/Tribune

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Bentley Historical Library, University of Michigan

G. Wayne Clough, Ph.D., P.E., Virginia Beta '64, secretary of the Smithsonian Institution, has announced he will retire in October 2014. Clough has served as head of the Smithsonian for six years. Before his tenure there, he was president of the Georgia Institute of Technology for 14 years. An engineer and technology enthusiast, Clough pushed Smithsonian museums to embrace digital and mobile platforms as part of their core mission and outreach efforts. Clough recently released a 77-page e-book



on digitization of museum collections, and he is pushing the Smithsonian to digitize 14 million pieces in its collection with the help of volunteers and private partners.

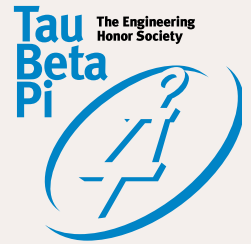
Richard H. Stanley, P.E., Iowa Alpha '55, retired after 58 years of service to the international engineering, construction, and environmental services company Stanley Consultants. He had been the company's chair emeritus since 2007 and was the 2009 TBPI Distinguished Alumnus. He continues as chair of The Stanley Foundation, which works to create fair, just, and lasting solutions to critical issues of peace and security. Stanley has been instrumental in strengthening consulting engineering by serving on boards and professional organizations, prominent among which were as chairman of the American Council of Engineering Companies and chair of the National Construction Industry Council.



Sally J. Steadman, Ph.D., Wyoming Alpha '69, has received Mortar Board National College Senior Honor Society's 2013 excellence in advising award with distinction. She was the 2005 TBPI Outstanding Advisor. Steadman's career has included being a civil engineer, computer scientist, adjunct assistant professor, and director of the engineering summer program/minority engineering program at the University of Wyoming. She is an adjunct engineering instructor at the University of South Alabama and the chief advisor to Alabama Epsilon.



To start something...
you just need a trailer...
a great idea...
and your own winning team...



YAHOO! was started in a Stanford University campus trailer in 1994 by Chih-Yuan "Jerry" Yang, *California Gamma '90*, left, and David R. Filo, *Louisiana Beta '88*, who were electrical engineering graduate students when they created a website named "Jerry and David's Guide to the World Wide Web". This was a directory of other websites, organized in a hierarchy, as opposed to a searchable index of pages. In April 1994, Jerry and David's Guide to the World Wide Web was renamed "Yahoo!" The rest is history. They worked together and with others to build a team. This became a multinational corporation with more than 11,500 employees and total equity of \$14.56 billion in 2012.

Tau Beta Pi's award-winning Engineering Futures Program teaches students the special skills needed to create and run such effective teams, like resolving interpersonal problems, conducting successful meetings, and presenting results to stakeholders. Your chapter can schedule an Engineering Futures session by contacting sherry@tbp.org.

TBPi Engineering Futures
...make the difference





LETTERS

Computing Intentions

• Alan Brown’s report on the Stanford experiment in law enforcement software development at the “We, Robot” conference, in *Robo Cop...*, in the Fall 2013 issue of *The Bent*, reaffirms for the current generation of engineers and software developers, a lesson we learned 40 years ago.

We were developing software for control and operation of (then new) earth orbiting sensor platforms.

We learned that programmers are expert at converting engineering requirements from specifications to computer instructions, but not the engineering intent that produced the specifications. To get the software we needed, we had to specify detailed procedures including what we called a “mathematical specification” which included the equations and logic to be programmed, as well as the test requirements for the software.

I’m sure the same applies to any technical field not comprised of common knowledge, including law enforcement, at which programmers are not trained experts.

David A. Korenstein, NY K ’60

NSA Advert

• I was shocked and dismayed to see the ad by the National Security Agency (NSA) on the back cover of the Fall 2013 *Bent*. We (Tau Beta Pi) should not be a party to helping the NSA in its recruiting efforts.

Despite the marketing spin of “defending threats to our nation,” for several years now, the NSA has been spying and collecting vast reams of information on ordinary Americans, unconnected to any crimes and unaffiliated with any terrorist organizations. No government should ever feel that spying on its citizens is acceptable. That is a slippery slope toward tyranny and the attendant gross misuse of personal information by those in power.

By warrantless spying on ordinary citizens, the NSA itself is a threat to the America we love. You

can’t defend freedoms by violating them. To do so means, in fact, there are no freedoms.

If you cherish the freedoms that define America, then violating our privacy by spying and collecting data on ordinary Americans is totally unacceptable. Tau Beta Pi should not be a party to enabling the NSA to continue its invasive data gathering through its recruiting ads, thus giving credibility to its existence and sanctioning its spying..

I would urge Tau Beta Pi to refuse any more ads by the NSA. To continue accepting ads from them is morally wrong and will be cause for me to resign my life membership.

John H. Davis, Ohio Γ ’60

• Seriously? In the middle of this controversy you put a full-page ad for NSA careers on the back cover of *The Bent* magazine?

How is that message supposed to go?

TBPI: “Help destroy this nation’s freedom and abuse the Constitution with the NSA! Lots of careers for ethically flexible TBPI engineers!”

Gullible TBPI Member: “Wow, I can even download the NSA app on the iPhone! I’m sure they’re trustworthy and would never use that to gather additional information for their global ubiquitous surveillance network.”

If this happens again, I may have to withdraw my membership permanently. I will not be part of an organization that endorses another whose unrelenting cause is to un-

dermine and subvert international security, cryptography, and privacy standards

Alexander C. Utter, CA Ω ’05

[Editor’s Note: We respect the views of our members and understand their concerns. The NSA has advertised in *THE BENT* for over eight years, and the advertisement in question was purchased a year ago.]

Statement of Ownership, Management & Circulation

Date of filing: October 1, 2013

The Bent of Tau Beta Pi, ISSN 0005-884X, is published quarterly by The Tau Beta Pi Association, Inc., 508 Dougherty Engineering Building, University of Tennessee, Knoxville, TN 37996-2215. The annual subscription price is \$10.00. Editor is Curtis D. Gomulinski, P.O. Box 2697, Knoxville, TN 37901-2697.

The magazine is owned wholly by The Tau Beta Pi Association, Incorporated, P.O. Box 2697, Knoxville, TN 37901-2697. There are no individual owners, bondholders, mortgagees, or other security holders. Nonprofit postal status has not changed during the past 12 months.

	Average No. Copies Each Issue Preceding 12 Months	Actual No. Copies Single Issue Nearest to Filing Date
Total No. copies printed (net press run)	90,475	90,328
Paid mail circulation	88,831	88,585
Sales through dealers and counter sales	0	0
Free distribution by mail (samples, complimentary)	1,284	1,306
Total distribution	90,115	89,891
Copies not distributed	360	437
Total	90,475	90,328

I certify that the statements made above are correct and complete.

—Curtis D. Gomulinski, Editor

TBPI Directory

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President Larry A. Simonson, Ph.D., P.E., *SD A ’69*, SDSM&T Fnd., 306 E. St. Joseph St., Rapid City, SD 57701 *larry@tbp.org*

Vice President Solange C. Dao, P.E., *FL A ’95*, 1110 E. Marks Street, Orlando, FL 32803 *solange@tbp.org*

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RHODES SCHOLARS

The Rhodes Trust has announced the 2014 class of American Rhodes Scholars. This year, thirty-two men and women were chosen from a pool of 208 finalists. Two of this year's scholars are Tau Bates:

Melissa L. McCoy, GA A '12, graduated from Georgia Tech with a degree in chemical engineering and intends to do her M.Sc. by research in environmental chemical engineering at Oxford.

Drew A. Birrenkott, WI A '13, is a senior majoring in biomedical engineering, biochemistry, and political science at the University of Wisconsin-Madison. He plans to do his M.Phil. in development studies at Oxford.

The scholarships were created in 1902 by the will of Cecil Rhodes, the British industrialist and colonial leader in Southern Africa.

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

Send us your witty caption for this photo from our archives, and if it is judged one of the best, you will win a TBP t-shirt.

It shows **Solomon J. Harwi, PA A 1886**, left, and



Ralph S. Healy, MD B 1913, during the 1947 initiation banquet in New York City. Email entries to tbp@tbp.org or mail them to HQ by February 3.

We received about 50 entries for the Fall Caption Contest. When we chose the picture at right, we did not know the identities of the two ladies with then Secretary Treasurer Emeritus **R.C. 'Red' Matthews, IL A 1902**.

We learned from **Ralph E. Warmack, Ph.D., MO A '67**, Arrangements Chair for the 1969 Convention, who was present when the picture was taken, that the two "un-

identified friends" were the first female delegates ever to attend a TBP Convention! "I don't recall their names or chapters, but can assure you that we looked forward to their arrival with great anticipation. When they finally arrived, we were dumbfounded by their looks...as well as their intellects and accomplishments, of course! Red was never timid and certainly not dumb-struck as we were. He quickly insisted on a photo and while I don't remember his exact words, they went something like "What took us so long?" and "My new cheerleading team!"

The ladies are **Margaret L. Marsden, MN A '70**, left, and **Margaret J. Domeny, IL B '70**. Ralph will receive a t-shirt, along with the two top-ranked entries:

"You said 'Go to Houston.' You said 'Go to the Tau Beta Pi Convention.' You said 'We'll meet lots of young, good-looking engineers.' Some girlfriend you turned out to be!"—**David A. Heutchy, PA Γ '69**

"And they said I was wasting my time getting an engineering degree."—**Dean A. Frickey, SD A '80**
Congratulations!



Profiles in Leadership #3

Bonnie J. Dunbar: Inspiring Youth to Reach High

Retired astronaut and now a university professor, Bonnie J. Dunbar, Ph.D., NAE, Texas Epsilon '83, let nothing obstruct her childhood dream of flying in space—demonstrating that, with hard work, no goal is too high.

by Trudy E. Bell © 2013 Trudy E. Bell

“I GREW UP on a 90-acre cattle ranch and farm in the Yakima Valley of south central Washington, where my parents homesteaded in 1948 just after World War II,” recounted former NASA Space Shuttle astronaut Bonnie J. Dunbar, veteran of five space missions between 1985 and 1998.

“My parents also rented about a thousand acres of federal sagebrush land in the summers for summer feeding of the herd of Hereford cattle. There was no room for traditional gender role-playing in the family business. As the eldest of four kids, my parents expected me to work.” Duties included rounding up cattle, checking fence lines, picking rocks from arable fields, and weeding cash crops like sugar beets. “It was very egalitarian: if one of us kids had an idea for a better way to do something, our parents listened.”

Moreover, “when you grow up farming and ranching, you are doing science and engineering,” Dunbar continued.

“You learn to understand and respect the weather, understand soil chemistry and geology in order to grow the best crops and gardens, learn biology from assisting animals give birth, and botany from farming. You learn the proper-

ties of materials, such as the difference between conductors and insulators: we had electric fences, and if you didn't want to get shocked, you learned to hold down the fence with a wooden stick and not a metal bar when you walked over it.”

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. The first two profiles were of Maria Klawe, President of Harvey Mudd College, (Fall 2012) and Norman R. Augustine, former President and CEO of Lockheed Martin Corp. (Spring 2013).

On the irrigated ranch, she also learned first-hand about risk and risk-taking. “The biggest gamblers in the world are farmers because they depend on the weather,” she explained. “There was no monthly paycheck—just an end-of-the-year check for crops and cattle—and no allowances for us kids. You learned survival skills.” Not only was it necessary to kill an occasional rattlesnake when alone on the range,

but “we had to learn to make everything.”

Her father repaired his own equipment, welding with an acetylene torch. As Dunbar and her two brothers and sister had few store-bought toys, “we made our own teeter-totter and learned ourselves about where to put the fulcrum because we were different weights.”

The lack of amenities generally found in urban areas did not deter the family from sharing a strong culture of education. “My grandfather, who had emigrated from Scotland to homestead in Oregon early in the 20th Century,



Dunbar with Joseph F. Sutter, *Washington Alpha '43*, Boeing design team manager for the 747 project, during her 2005-10 tenure as president and CEO of The Museum of Flight.

once said to me, ‘Your greatest possession is knowledge, for no one can take it from you,’” Dunbar recalled.

As a result, she loved learning at the rural K-8 school in the nearby town of Outlook. She spent all her free time reading; H.G. Wells and Jules Verne were her favorite authors. In the summer, when the school library was closed and she rarely traveled to the nearest larger town (Sunnyside), Dunbar looked forward to each week’s visit of the bookmobile. On black-and-white TV, she was captivated by *Watch Mr. Wizard* (1951–1965), in which Don Herbert demonstrated the science behind everyday things to a young boy and girl, and *Flash Gordon*, who explored the universe before the days of computer special effects.

In October 1957, the Soviet Union shocked the world with its launch of *Sputnik I* into Earth’s orbit. A year later, the U.S. founded the National Aeronautics and Space Administration (NASA). “It was an exciting time for Americans,” Dunbar recalled. And at age nine in 1958, she determined she “wanted to design spaceships and ride in them.”

“Oh, sure, there were dinosaurs around who thought girls shouldn’t think about science or engineering,” Dunbar tossed off, “but all my friends, teachers, and parents were very supportive. If there was negativity, I just ignored it.” She was very athletic—“you have to be to work a ranch”—and played team sports. The Outlook school was so small there were not enough boys to make a baseball team, so girls had to play some of the positions. In the farming community, she played touch football often as quarterback.

Education program

When she graduated from eighth grade, her teacher Mr. Miller asked her what she wanted to do with her life. “When I told him, he encouraged me to take algebra in ninth grade at Sunnyside High School.” She did, followed by geometry, trigonometry, and math analyses. She also took biology, chemistry, physics, and two years of Latin, and was active in cheerleading, math club, and debate. Dunbar excelled in high school. “My high school physics teacher, Mr. Anderson, recommended that I consider a career in engineering.”

Although before the dawn of the Space Age, college would have been beyond her family’s means (“for much of my childhood, I grew up in a house without an indoor toilet”), the 1958 National Defense Education Act (NDEA) with its program of low-interest loans and grants for academically qualified students studying science and engineering changed everything. “I entered the University of Washington in 1967 on the NDEA,” Dunbar declared, majoring in ceramic engineering because the department chair, **James I. (Doc) Mueller**, Ph.D., *Washington Alpha ’39*, explained that they had NASA grants to help design parts of the new Space Shuttle.

Upon graduation in 1971, she worked two years for Boeing Computer Services as a systems analyst followed by two more back at the University of Washington to earn her M.S. in ceramic engineering. After a summer at Harwell Laboratories (Atomic Energy Research Establishment) in England, Dunbar was hired as a senior research engineer at Rockwell International Space Division in Downey, Califor-



This Leader In Brief

Full professional name: Bonnie Jeanne Dunbar

Current position: M.D. Anderson Professor of Mechanical Engineering, University of Houston; Professor, Biomedical Engineering; Director, UH STEM Center; Director, Aerospace Engineering Graduate Program.

Birthplace: Sunnyside, WA.

Highest degree: Ph.D., mechanical and biomedical engineering, University of Houston, 1983.

Major career highlights: Senior research engineer, Rockwell International Space Division, 1976–78; payload officer/flight controller, NASA Johnson Space Flight Center (JSC), 1978–80; NASA astronaut 1980 (flown five Space Shuttle missions: STS-61A *Challenger*, 1985; STS-32, *Columbia*, 1990; STS-50 *Columbia*, 1992; STS-71 *Atlantis*, 1995, first docking to Space Station *Mir*; STS-89 *Endeavour*, 1998, docking mission to Space Station *Mir*); Deputy Associate Administrator, Office of Life and Microgravity Sciences, NASA Headquarters, 1993; Assistant Director, NASA JSC, 1998–2003; Deputy Associate Director, Biological Sciences and Applications, NASA JSC, 2003–05; President and CEO, Seattle Museum of Flight, 2005–10; engineering professor and Director of STEM Center, University of Houston, 2013.

Board memberships: National Science Foundation (NSF) Engineering Advisory Board (1993–1999); Aerospace Corporation (current).

Honors: Fellow of American Ceramic Society, American Institute of Aeronautics and Astronautics, and Royal Aeronautical Society. Awarded NASA Space Flight Medal five times, NASA Outstanding Leadership Medal, and NASA Distinguished Service Medal. Elected in 2002 to the US National Academy of Engineering. Seven honorary academic degrees. 2012 AAES Norm Augustine Award for Outstanding Achievement in Engineering Communications, 2009 ASME Ralph Coats Roe Medal. In 2013, selected into Astronaut Hall of Fame.

Greatest accomplishments: “Not for me to judge. My life is still a work in progress.”

Hero: John Glenn, for both his achievements and his character.

Hobbies: Music (pianist); flying (private pilot); hiking and mountain climbing: “Summitting Mount Rainier is on my bucket list.”

Favorite books: “I like the classics.” Favorites include Verne’s *From the Earth to the Moon* and Michener’s *The Drifters*.

Personal motto: “From my father: ‘Don’t build your own fences [barriers]. If the gate is shut, go around.’” And—“To be a team player, one must also know how to be a good follower.”

If you could do one thing over: “I don’t think I’d do anything differently. You make mistakes, but through them you learn life’s lessons.”



TOP: Dunbar “driving” her first tricycle with youngest brother Gary hitching a ride. Note the wild sagebrush country of the family ranch in south central Washington in the background. CENTER: As an undergraduate in engineering at the University of Washington, Dunbar was selected to join the Air Force ROTC Auxiliary, Angel Flight, and is still involved as a board member. The organization, is now called Silver Wings (as Angel Flight is a group of pilots who fly free medical flights). BELOW: With President and Mrs. George H. W. Bush in 1990. After Dunbar captured a satellite with a robotic arm on STS-32, the Shuttle crew was invited to the White House.



nia. There she found herself in the center of manufacturing for the Space Shuttle, developing equipment and processes for its ceramic tiles, and spending much of her time working on the Space Shuttle in Palmdale, CA.

In 1978, Dunbar joined NASA Johnson Space Center (JSC) in Houston, Texas, as a Payload Officer and flight controller, integrating items in the Shuttle’s payload bay, and then operating them during the mission. A year later, she was the guidance and navigation officer when the first U.S. space station, Skylab, then at the end of its life, was guided to reenter Earth’s atmosphere safely away from populated areas. In 1980, she finally achieved her dream: she was selected to begin training as a NASA astronaut.

Between 1985 and 1998, she flew five Space Shuttle missions [see sidebar for list] on four of the five craft in the fleet (all but *Discovery*), logging over 50 days (1,208 hours) in space. Before her fourth flight, she was tapped to qualify as a back-up crew member for a three-month flight on the Russian space station *Mir*, and sent to Star City, Russia, for 13 months of training. Although she never flew a long-duration mission on *Mir*, she qualified for both *Soyuz* and *Mir* flight, became fluent in Russian, and was on the first Space Shuttle to dock with *Mir* in 1995.

Dunbar’s knowledge of both space programs lined her up for her next assignment: from October 1995 to November 1996, NASA detailed her to the JSC Mission Operations Directorate as assistant director, where she chaired the International Space Station (ISS) Training Readiness Reviews and helped to train astronauts and cosmonauts for joint Russian-American operations aboard the ISS.

Final Mission

After her final mission (the eighth docking mission to *Mir*) in 1998, she served in several assistant and associate director positions at JSC. In 2002, she was elected into the National Academy of Engineering, which she called “one of my proudest professional moments.” She retired from NASA in September 2005 for the next phase of her career: dedication to science education of today’s youth as president and CEO of the Museum of Flight in Seattle, WA.

As JSC assistant director in the late 1990s, Dunbar and NASA’s senior staff observed it was much more difficult to find qualified U.S. citizen engineers to hire. Today she, like many engineering colleagues, is concerned that fewer than 5 percent of U.S. undergraduates today are enrolled in engineering. “More college students are majoring in hospitality and leisure industries than in science and engineering,” she declared. “Yet in Asian countries, 40 to 45 percent of undergraduate students are enrolled in engineering because they know it will transform their world and society.”

In addition to insufficient math and science preparation in K-12 education and declining public literacy in science and engineering, Dunbar points to a third culprit: popular media. “Negative stereotypes about scientists and engineers permeate popular culture,” she explained. “For example, girls who are good in math are often portrayed as being socially inept. One school guidance counselor said to me ‘I discourage students from considering careers in engineering because my students like to work with people’. A director of

an art gallery asked ‘Don’t engineers just make bombs?’ A Congressman stated during a budget hearing with NASA ‘Why do we need to fund more weather satellites when I can go onto the internet to see the weather every day?’

“How do we ‘change the conversation?’” she asked, quoting the title of a 2008 report by the National Academy of Engineering that became a NAE initiative. “Much of the responsibility can be laid at the feet of the popular public media, including Hollywood. Unfortunately, Hollywood is probably not aware how much of their own technology and business case is generated and created by engineers. How do we reach them? How do we turn around such appalling misunderstandings?”

‘Another Sputnik moment’

Dunbar is working tirelessly to raise awareness. Through the Museum of Flight in Seattle, which serves more than 140,000 students every year in STEM (science, technology, engineering, and mathematics) programs, she found that working directly with the public through informal science education was very effective. In 2010, she joined the faculty of the Cullen School of Engineering at the University of Houston, where she is both the director of the University STEM Center as well as director of the graduate program in aerospace engineering. The University STEM center coordinates approximately 34 university programs serving K-16+ students. As a professor of mechanical engineering, she intends to ensure a continued pipeline of talent that will take the nation back to the Moon and on to Mars.

“I am concerned about the future of our nation,” Dunbar states. “We stand at a crossroads in terms of educating the scientists and engineers we need to prosper and lead. We need to remain a great nation that explores and innovates. In some respects, we are still living off the nation’s investment in the Apollo program to land a man on the Moon. That program alone gave us unparalleled investments in education, research and development, innovation, and new industries.

“However, where once we strove to be number one in technical indicators such as patents granted, percentages of graduating engineering and scientists, and academic math scores for high school students, often now we are not even in the top ten. And we seem to be satisfied by being just above average when compared to the rest of the world. I am not satisfied with that ranking. I remain an optimist about what this nation can do when motivated and mobilized forward—and we are at another Sputnik moment.”

Trudy E. Bell, M.A., (t.e.bell@ieee.org, www.trudyebell.com, and [@trudyebell](https://twitter.com/trudyebell)), is senior writer for the University of California High-Performance AstroComputing Center (<http://hipacc.ucsc.edu>) and a contributing editor for *Sky & Telescope* magazine. A former editor for *Scientific American* and *IEEE Spectrum* magazines, she has written a dozen books and nearly 500 articles, 19 of which have won top journalism awards. Bell shares two unusual commonalities with Dunbar: both were born not 50 miles apart in rural southeast Washington, and as a college senior Bell was a mission controller for sun-orbiting spacecraft *Pioneers 6, 7, 8, and 9* at NASA Ames Research Center. This profile is her 20th feature for *The Bent*.



Challenger leaves Kennedy Space Center October 30, 1985, carrying Mission Specialist Dunbar on STS-61-A, her first spaceflight.



On Dunbar’s third Shuttle flight, STS-32 in 1990, she operated the Fluid Experiment Assembly (FEA). Note the University of Washington Husky emblem on the experiment, which she helped to design.



Astronauts and cosmonauts of the combined *Mir* and *Endeavour* crews in the Spacelab, which was located in the payload bay of the Shuttle, during mission STS-71 in 1995. Dunbar is center at the bottom.

What Mother Never Told You About Engineering Futures

With insights and input from many EF facilitators and TBPI volunteers, including Steve Kramer, Mike Peterson, Solange Dao, and Katy Luchini Colbry

By **John R. Luchini**, Ph.D., P.E., Michigan Gamma '71 (September 2, 1949—September 27, 2013)

SOME 44 YEARS AGO, when I was an undergraduate at the University of Michigan, I received an invitation to join Tau Beta Pi. This was the first time that anyone had recognized my potential as an engineering student—I was the first person in my family to go to college—and my folks really weren't sure that I'd actually graduate and find a job.

In fact, they had insisted that I complete the vocational education program in high school, which would ensure I had the necessary skills to get a "good job." At the time, a good job was usually found at one of the auto companies near my hometown of Dearborn Heights, MI, and I worked on an assembly line during one college break. While I appreciated the job, the days were long and not particularly interesting, and by the end of the summer I was highly motivated to return to college and work even harder.

Remained Active

So, it was significant when I earned an invitation to join the Engineering Honor Society. My parents were pleasantly surprised and my father even agreed to pay my initiation fee. I became involved in the Michigan Gamma Chapter as a student officer and remained active while I completed graduate studies at U of M. After graduation, I accepted an engineering position at Cooper Tire & Rubber Company. Ultimately, I spent more than three decades working as a scientist and engineer, adapting along the way to the introduction of computers and the increasingly global nature of our workforce. I also continued my association with Tau Beta Pi and had the privilege of working with and learning from very smart engineers from all

walks of life. As a student member, I had the opportunity to serve as chapter president and attend several Conventions. **Robert H. 'Bob' Nagel**, P.E., *New York Delta '39*, was Secretary-Treasurer of the Association at this time, and he often gave a talk called "What Mother Never Told You about

Tau Beta Pi." Bob covered many of the interesting, but less well-known, aspects of the history of the Association, like why it was significant that "the proposal" was not at once accepted and **Irving A. Heikes**, *Pennsylvania Alpha 1885*, decided to return and discuss TBPI with Professor Williams before accepting membership.

Cigar Smoke

Bob also talked about early concerns about the Association being "Elitist versus Egalitarian" and shared memories of early Association leadership, like the cloud of cigar smoke that surrounded **Robert C. 'Red' Matthews'**, *Illinois Alpha 1902*, desk. This talk also recounted the beginnings of the Alumnus Chapters, and the conflicts between Presidents **A.D. Moore**, *Pennsylvania Gamma 1915*, and **Paul H. Robbins**, Ph.D., P.E., *New York Beta '35*, over the future direction of the Association.

After hearing Bob's talk many times over the years, I was inspired to develop a

similar account of the history of our Engineering Futures (EF) program. District Director **Stephen K. Kramer**, Ph.D., *Utah Beta '81*, authored "A Brief History of the Futures" for the Fall 1991 edition of *The Bent*, documenting many of the major decisions and goals of the program. Now, nearly three decades after those efforts to develop training programs for student leaders of TBPI, I'd like to share some of the lesser-known aspects of the history of the EF program.



Luchini makes a point during an EF session in 2002.

In 1983, I was volunteering as a Director in District 7 (Ohio and Michigan). When that term expired, the Executive Council asked me to serve as Director of District Programs for the Association. This was a new title for a role that had evolved over time: from **G. Ronald Ames, Maryland Beta '69**, who served as Director of Chapter Development, through **Joseph W. Jimenez, California Delta '50**, who later served as Director of Alumni Affairs.

First Task

In this new role, my first task was to create a training manual for new District Directors. Next, I was asked by Paul Robbins and the Executive Council to help develop training for the student members. At the Convention, we offered Chapter Operations Seminars to help students learn basic principles for running their chapters. The student delegates generated 140 pages of notes during the first Convention, where I helped run the Chapter Operations Seminars. Afterwards, we were amazed to realize that there was “nothing new” in the notes—students were simply encountering the same problems and questions that had been solved by previous chapter officers. Ultimately, we distilled the notes into a “study guide” for the *Presidents' Book* to help improve the transfer of knowledge between student officers, and the Chapter Operations Seminars eventually evolved into the Interactive Chapter Exchange, or ICE, program that is currently offered at Convention.

After honing our technique at Convention, we started offering similar chapter leadership seminars at various locations around the country in order to reach students not able to come to Convention. While the “Engineering Futures” curriculum and name would not be introduced until a few years later, by the mid-1980s the Association was regularly offering training to chapter officers and student members in the basic skill sets—strong teamwork, interpersonal communications, effective leadership, creative problem solving—that are still covered in today’s EF program.

Evolution of Program

In addition to understanding how the structure of Engineering Futures evolved through the district programs, it’s important to understand the underlying motivation and goals of the TBPI leaders who championed the development of the program. At least as early as the tenure of G. Ronald Ames, we had been looking for a way to efficiently train chapter leaders. In 1985, the Executive Council led by Paul Robbins conducted a survey of alumni in advance of the Association’s Centennial. Alumni donors were asked about the value of The Association in their careers and specifically why they chose to continue to donate each year. Part of the survey explained the types of skills training that we were offering through the nascent Engineering Futures program. The alumni who completed the survey recognized the importance of training students to fill leadership roles: this was a reason that TBPI was of value to the profession and continued to be worthy of their monetary donations. Indeed, after the survey, donations increased.

Many alumni volunteered to help facilitate the Chapter Operations Seminars and other student training programs

The cover of the EF brochure.

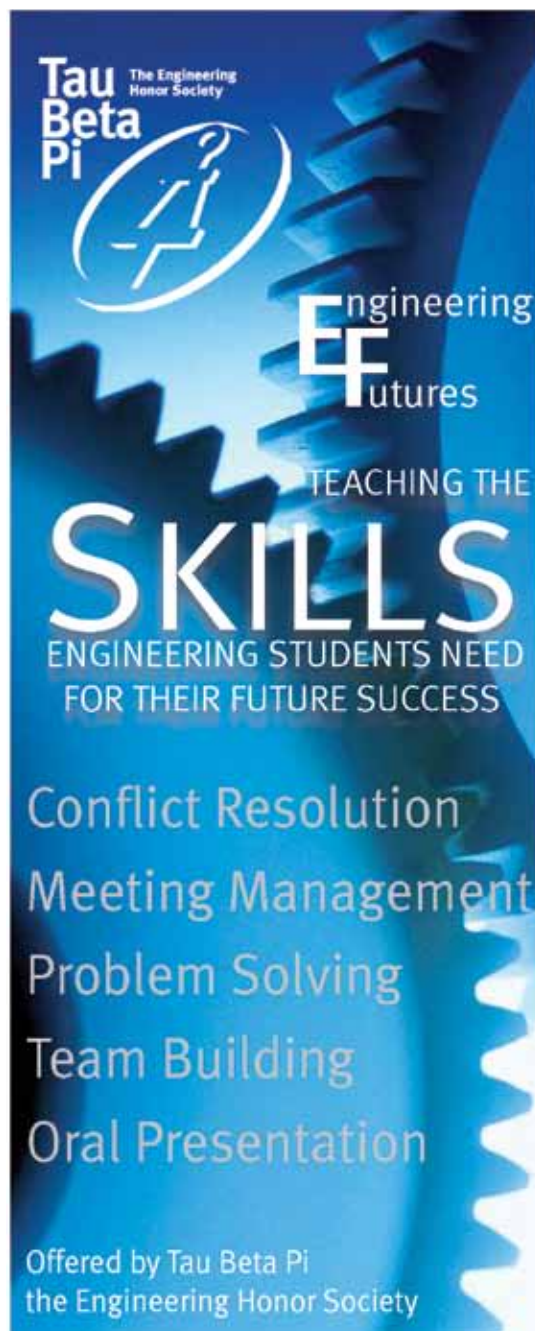
we were developing. These alumni provided the benefit of their experience to younger engineers, thus accelerating the students on their career paths. The alumni facilitators were also able to remain connected to the student chapters and hone their own interpersonal and facilitation skills.

Under the Executive Council leadership of **Martha S. Polston, Tennessee Alpha '79**, and **James W. Johnson Jr., North Carolina Alpha '77**, a significant focus was formalizing the EF Program as the preferred way to conduct training for chapter officers and student members. A curriculum was developed, facilitators were recruited, and the first official “Engineering Futures” session was conducted at the 1988 Convention in Iowa.

Growing Pains

While there were some growing pains, the overall student response was positive enough that the Executive Council began exploring options for expanding the program nationally. Martha wanted to know how fast we could roll out the program and scale up to offering 200 sessions per year in 200 chapters around the country. I calculated that it could take 8-10 years to recruit enough new facilitators to reach that goal, if we stuck with the *ad hoc* training process that we had been using. Clearly, we needed a more robust system for preparing new facilitators if we wanted to offer Engineering Futures nationwide.

In 1988, Stephen Kramer was a Director in District 12 and had been extensively involved in the creation of the student training seminars and EF program. As one of the original facilitators, Steve saw first-hand both the





An EF session in progress in Qatar.

To assist in this task, Kerry purposely designed Engineering Futures so that a motivated student who completed the entire program would develop the basic skills needed to facilitate the People Skills module successfully.

I actually put this theory to the test on occasion, when I arrived at a chapter to find too many students to fit into the room scheduled for EF. If there was an experienced student in the audience, I would hand off an

benefits of the program for students, and the potential difficulties of having Tau Bate volunteers create a training program in an area beyond their expertise. So, Steve reached out to a friend, Dr. Kerry Patterson, who was an expert in organizational psychology. At the time, Kerry was co-founding a “start-up” company (Interact Performance Systems) to facilitate interactive people skills training in the workplace, using videos as the mechanism for showing participants how to interact effectively with others. Kerry’s approach was an outgrowth of his own dissertation research, which examined interpersonal relationships in professional settings, and also drew on a wealth of experience in teaching and learning, dating back to Platonic methods of instruction.

Kerry Patterson talked to Steve and Martha about the purpose of Engineering Futures, which the Executive Council had defined in a vision statement: “In order to promote excellence in the engineering community, Tau Beta Pi seeks to provide exemplary leadership and training opportunities to inspire each member.” Ultimately, Kerry offered to create a version of the Interact training materials that were tailored to a student audience. This curriculum included the four original modules of the EF program: People Skills, Team Chartering, Group Process, and Analytical Problem Solving.

Clear Structure

While the new training materials and integrated videos provided a clear structure for the EF program, the deeper value for TBPI was that Kerry integrated “facilitation training” right into the curriculum. In order to deploy the Engineering Futures program on a large scale, we needed to recruit and train many volunteer facilitators from among the alumni.

extra copy of the People Skills manual and videotape and have the student facilitate a parallel session in an extra room. That actually worked surprisingly well, and in the early years of the Engineering Futures program new facilitators would “self-train” by first completing the entire EF program, then following the manual to deliver the People Skills session multiple times. Once new facilitators were comfortable with People Skills, they would then receive materials for the Group Process module, and later learn to facilitate Team Chartering and Analytical Problem Solving in the same manner.

Developing Facilitation Skills

In looking back at the early forms of the EF program that Kerry developed, the “facilitation tools” were quite literally written into the manual. For example, Kerry included instructions for preparing and using flip charts to help engage students in the session and prompts for the facilitator to ask different types of questions. By recording students’ answers in “real time” on a flipchart or chalkboard, participants were actively drawn into the conversation—which is an experience that can be lost in the modern use of PowerPoint, when students stop thinking about the question because they know the answer will be revealed on the next slide.

Kerry’s low-tech approach challenged facilitators to help participants realize the answers for themselves. Sometimes the facilitator has to challenge participants by drawing their concerns out into the open; this is not done to ridicule the individual, but instead allows everyone to understand the concern for what it is and the facilitator can then guide the group to come to a resolution together. As EF facilitators gain experience, they become more comfortable letting the group lead the session and mature into the role of the

“guide on the side,” rather than defaulting to the “sage on the stage” that is commonly found in college classrooms. A fundamental lesson for facilitators is to learn to have faith in the group that you’ve assembled: believe that they are so darn smart, they will figure it out for you!

As a facilitator, when I would prepare for a session, I would always think about the mental attitude of the students coming into the class—were they there by choice, or to fulfill a requirement for their initiation or their course? Often, I found that students came into EF sessions with different motivations and interests, and this shaped their perception. For example, in examining an interpersonal problem situation, some students were highly focused on the facts (like the boxes weren’t cleaned up after the shift ended) while others were very focused on the feelings (such as my workers are tired and want to go home instead of clean up). The reality is that if the two groups can’t understand the other perspective, then no true resolution is possible. The best interactions arose when we could get both groups thinking about the other side of the issues—but for this approach to work, the facilitator had to guide the students to the discovery, rather than trying to force ideas onto students. Certainly, this approach led to some uncomfortable moments as new facilitators gained skills and navigated awkward questions, but actively engaging the participants in the seminar also led to remarkable insights and high-energy sessions where students walked away feeling like they had gained valuable skills.

People Skills

While the People Skills module was designed to introduce tools for effective interpersonal communications, the Analytical Problem Solving (APS) module was designed as a sort of “master class” that gives students very specific skills for serving as facilitators of problem-solving groups. The APS module reinforces practical skills for working effectively in groups, like separating the facilitation, note taking, and time keeping roles. APS also gives participants tools for drawing ideas out of the group and responding appropriately when the ideas that

arise don’t seem to fit the problem at hand. Ideally, students who complete APS with a skilled facilitator should be ready to go facilitate problem-solving groups on their own. I always enjoyed facilitating APS at Convention, where the students I trained in the EF session could then immediately use these skills to facilitate brainstorming, list reduction, and other problem solving tasks during ICE sessions, committee meetings, and other Convention activities.

When the Engineering Futures program was initially conceived more than two decades ago, it covered materials and skills that were not included in typical engineering curricula. As our profession has evolved over time, however, more schools are incorporating interpersonal skills training into their coursework and many engineering students take classes in business or other areas where these skills are taught.

Unique Contribution

Today, the unique contribution of the EF program is that it offers “training”—with a focus on rehearsing interpersonal and problem solving skills—rather than simply conveying information in a lecture setting. Active facilitation is key to this training approach; although some facilitators prefer to streamline EF sessions to provide students with the basic information (via PowerPoint) as quickly as possible, the most beneficial sessions are those that allow students to take their time with the materials and fully engage in the rehearsal exercises. Thus, the skill and approach of the facilitator directly influences the experience that students have in the EF program. Another key to having a successful session is to make sure



EF Facilitators **Hitesh R. Bhambhani**, *Texas Eta '02*, and **Catherine G. Gorzkowski**, *Pennsylvania Alpha '00*, address a session during the 2007 Convention.

that the advance “marketing” explains the parameters of the training, including the length of the program and the expectation that students take an active role during the session. When students come to EF sessions expecting something closer to a brief, classroom lecture-style experience they are frequently dissatisfied to find that the session is longer and more involved than a college course. In addition to marketing the program appropriately, it is also preferable for students to participate in the program voluntarily. “Forcing” electees to attend EF sessions often leads to poor session ratings and other unintended consequences, such as giving participants a negative feeling about participating in similar training in the future.

Reflections on the Futures

I’ve been privileged to be a member of Tau Beta Pi for more than 40 years, and in that time I’ve seen many changes to the Association. I attended the first Convention with female voting delegates in 1973 at the University of Florida. I was there when the Convention voted to join Tau Beta Pi and Sigma Tau. In 1985, I was able to attend the Centennial Convention at Lehigh University, which featured talks by Isaac Asimov and **Lido A. ‘Lee’ Iacocca**, *Pennsylvania Alpha ’45*, among other dignitaries and leaders of the engineering profession. I have videotape recordings of their talks, which are both amusing and inspiring to watch nearly 30 years later. Iacocca warned the delegates to “watch out” for the very smart women who were finally making their way into the engineering profession in larger numbers, while Asimov talked about his ideas for intelligent robots and the importance of mortality as part of the full, human experience of life.

In recent years, I had the chance to work with many student delegates as the Convention Parliamentarian, and even as the Convention Chair, and one of my favorite tasks was working with the students to help them figure out how to accomplish their goals within the structure of Robert’s Rules of Order and the Convention.

In more than three decades of work as an engineer and research scientist, I’ve learned that teamwork, communication, and problem-solving skills are just as essential to the modern engineer as the more traditional tools of our profession. In order to build a great team, it is important to recognize and value the people around you. I always tried to hire people with great potential and invested time and effort in mentoring those young engineers, and they contributed greatly to my professional success.

Giving Back

I’ve also learned the importance of giving back to your community. While I was still a student officer at Michigan Gamma, Bob Nagel came to Ann Arbor and took my wife, Tamara, and me out to lunch. Bob wanted to talk about how I could stay involved in Tau Beta Pi as an alumnus. Soon after graduation, Bob called and asked me to volunteer—and in the intervening decades I met so many smart, capable, caring people through this Association that, forty years later, I am still saying “yes” to the email requests from

TBPI Headquarters that have supplanted the phone calls for assistance.

In reflecting on these decades, I’ve come to understand that in order to be a good engineer, it is essential to truly know oneself. For instance, while I love working with people, I enjoy mentoring more than managing, and I was truly happy to be “promoted” out of management and back into a technical role toward the end of my career. I’ve had the privilege of building some exceptional teams, and the challenge of rebuilding as team members were recruited to other positions in the company. I’ve worked with countless engineers, scientists, and Tau Bates over the years, and come to appreciate that “Excellence in Engineering” requires more than just “the knack” for mechanics: true excellence is achieved through the interaction of different types of intelligence.

Thus, the best engineers are those who can integrate their technical skills with an understanding of arts and humanities, or who can build and mentor a team of individuals who think and work differently, but who are united in pursuit of a common goal. Learning to communicate with people, work effectively in teams, and creatively solve problems is the core of Engineering Futures, and in developing this program Tau Beta Pi continues to invest in students and alumni who will embody the principle of “Excellence in Engineering.”

John R. Luchini, Ph.D., P.E., *MI Γ ’45*, retired in 2011 as Senior Research Scientist and Engineer after 34 years with Cooper Tire and Rubber Company. TBP is grateful for his 44 years of service in many areas.

John was a member of Sigma Xi and the Society of Automotive Engineers, and in 2010 was elected as a Fellow of the American Society of Mechanical Engineers. He consulted on a number of engineering and professional projects; served on the Industry Advisory Board for Physics at Kettering University; and regularly conducted classes and seminars for college students, including hundreds of Engineering Futures sessions across the country.



Luchini passed away on September 27, 2013.

John designated the Tau Beta Pi Engineering Futures Fund to receive contributions in his memory. Donations may be directed to The Tau Beta Pi Association/ Engineering Futures Fund (c/o Curt Gomulinski, Executive Director, P.O. Box 2697, Knoxville TN 37901-2697).

President Simonson Reports to the 2013 Convention

THE EXECUTIVE COUNCIL leads the Association under the provisions of the Constitution and Bylaws and the acts of the Convention. It provides leadership to guide national programs through Executive Director and Secretary-Treasurer Curt Gomulinski, Assistant Secretary-Treasurer Roger E. Hawks, the Headquarters staff, District Directors, Chapter Advisors, and many additional outstanding volunteers. The Council receives guidance from and reports to the Convention.

SPECIAL TRIBUTE

Prior to this Convention, Tau Beta Pi lost two great leaders: Doug Green and John Luchini. Doug Green served as Association President from 1998 to 2002 and passed away on September 29, 2013. John Luchini was an Executive Councillor from 1994 to 1998. John was instrumental in developing the Engineering Futures program, served as an EF facilitator for more than 22 years, and facilitated literally hundreds of sessions. He attended more than 30 Conventions and served as the Convention Chair in 2009, and as Convention Parliamentarian nine times including the Lexington Convention last year. John passed away on September 27, 2013...exactly one year after the first day of last year's Convention. As fate would have it, John encouraged us at last year's Convention to develop a succession plan for Convention Chair and Parliamentarian. John attended the initiations of his daughter, Katy, two sons, Tim and Mark, and his son-in-law, Dirk, whom John considered his son. John was very proud of his TBPI affiliation. The Luchini family has designated the Association to receive memorials in John's honor. His wife, Tamara, and Katy and Dirk, are with us tonight to recognize his many contributions.

THE CONDITION OF THE ASSOCIATION

Tau Beta Pi is the largest engineering society in the world with more than 545,000 initiated members. The number of active members is most important to the health of the Association. The 241 chapters had a very good year, initiating 9,207 members, a decrease of eleven initiates compared to the previous year, but an increase of more than 1,500 over that reported six years ago. Congratulations to all who have been involved with the initiation process. Your efforts are well recognized. I challenge you to allow me to report an increase in initiate numbers at next year's Convention in Spokane, WA. We still have a ways to go before we can match the all-time record of over 13,000 initiates in 1984.

We are a very active honor society, providing many member benefits. Your attendance at this Convention is an opportunity for you to be involved in conducting the business of TBPI. Your participation is important for the

future of our Association. Please accept your responsibilities and be actively involved. This Convention is funded from many sources, including a portion of each member's initiation fee, corporate sponsorships, career fair fees, contributions from over 11,000 members, and earnings from the Association's Trust Fund. Looking at the numbers, our annual budget is about \$3 million. This fiscal year, for the first time, alumni contributions exceeded \$1 million. The assets of the Association include more than \$23 million of portfolio investments. This Convention alone costs approximately \$500,000. With this half-million dollar investment, TBPI is counting on each of you to make sure that it pays huge dividends and that the momentum of our organization continues to move forward.

Our 12-member staff in Knoxville is talented, loved by the Association, and efficient. We are supported by hundreds of volunteers and thousands of donors. Every year we are joined in our mission by several thousand top engineering students.

2012 CONVENTION BUSINESS

Each year the Convention has an opportunity to make changes to the Constitution and Bylaws of the Association. The 2012 Convention approved fifteen packages of amendments, which were ratified by the chapters and reported in the Winter 2013 *Bent*. I expect that additional amendments to the Constitution and Bylaws will result from your work during the next two days.

In addition, the EC was asked by you to review the text voting system used at Convention. The EC has evaluated and tried many forms of digital voting and believes the current text method is the most efficient and cost effective method currently available to us.

After reviewing several additional recommendations from the 2012 Convention, the EC has not taken further action.

OTHER EC ACTIONS

The EC directed Executive Director Gomulinski to begin a search process for a Director of Alumni Affairs. After a committee review of the candidates, the EC has appointed Tricia Gomulinski to the volunteer position of Director of Alumni Affairs.

A Vision Development Group was created nearly three years ago to do "Blue Sky thinking" for Tau Beta Pi's future. A group of former corporate CEOs and other high level business executives, and professionals was assembled to provide guidance for our society. The group had their final meeting in New York one year ago and made a set of recommendations to the EC.

1. Review and approve the Vision, Mission, and Purpose statements. This task has been assigned to a 2013 Convention committee.

2. Form a pilot Young Engineer Organization in the New York/New Jersey area. Rodger Smith has spearheaded this pilot project and there are discussions to expand this program to other parts of the country. In addition, several alumni chapters have been chartered or re-activated.

3. Form an Executive Advisory Board and a Student Advisory Group. The latter has been formed and 7 out of the 9 members of the Student Advisory Group are here this weekend. Discussions to establish the Executive Advisory Group are scheduled this week among the four Vision Development Group leaders.

We hope for Tau Beta Pi to represent the Gold Standard for Engineering. A very important part of the process was the input received from delegates at the Convention two years ago. The focus group input was most valuable and has had a huge impact on the discussions to provide focus and to improve the operations of the organization. Student input has always been and will always be valued.

You will have an opportunity to meet four members of the Vision Development Group at this Convention. We are very fortunate to have Ralph Rockow deliver Saturday evening's keynote address. Ray Rothrock was our keynote speaker last year and will be here tomorrow night. Rodger Smith and Harry Lange will present a personal finance workshop tomorrow night as they did this afternoon as part of the Professional Development programs.

EXECUTIVE COUNCIL ELECTION

The current Executive Council was elected for a second four-year term three years ago. The 2013 Convention will elect a new Executive Council and they will be installed at the 2014 Convention.

CHALLENGE

Let's have a great Tau Beta Pi year. I challenge you to convert the energy that you bring to this Convention into productive projects to benefit your chapter's members and to positively impact the future of the engineering profession. It is my hope that you will benefit personally from your experiences while you are in Ames and while

2006-14 PRESIDENT

Larry A. Simonson, South Dakota Alpha '69, Ph.D., P.E., received B.S., M.S., and doctorate in



electrical engineering from South Dakota School of Mines and Technology, and returned as a member of the faculty in 1976 after working for Texas Instruments for three years. He served as department chair of Electrical and Computer Engineering for five years and retired as Professor Emeritus of Electrical and Computer

Engineering in 2008. He currently works for the South Dakota School of Mines and Technology Foundation and makes efficient use of his time not only investigating new opportunities for his university, but to also visit Tau Beta Pi alumni individually and in groups.

He has served as Chief Advisor of South Dakota Alpha since 1986, District 12 Director during 1994-2006, and Engineering Futures Facilitator during 1990-2008.

working with your chapter throughout the year.

We have the privilege to be guests of Ames and Iowa State University for the next 2-1/2 days. Let's be responsible Tau Bates and represent our honor society and our respective universities well in all that we do. Each delegate is responsible for attending all meetings according to the very busy Convention schedule. Many of you attended the Career Fair earlier today. During the next 2-1/2 days, you will conduct the business of the Association, meet outstanding engineering students from chapters other than your own, and have the privilege of helping us honor the 2013 Tau Beta Pi Laureates, the 2013 TBPi Outstanding Advisor, the 2013 McDonald Mentor Award Recipient, and the 2013 Distinguished Alumnus. Enjoy the experience.

Send *The Bent* to Me

(Detach and mail to: Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697. Allow four-to-six weeks for subscription to take effect.)

- I enclose \$75, for which I shall expect to receive *The Bent* for life. I will keep you informed of any change of address.
- I enclose \$12.50 as the first payment for a *Bent* Life Subscription. Remind me to send \$12.50 each year for the next four years.
- I enclose \$10, which will keep me on the mailing list of *The Bent* for one year. I should appreciate an expiration notice a year from now, so that I may renew without missing any issues. (Note that you may call 865-546-4578 or 800-TAU-BETA to pay by credit card.)
- I enclose \$40, for which I shall expect to receive *The Bent* electronically for life. I will keep you informed of any change of email address.

Name _____ Chapter _____ Class _____

Address _____ Email _____

City _____ State _____ Zip _____

Iowa Alpha hosts the 2013 gathering Tau Beta Pi's 108th Convention

THE 108th Convention of Tau Beta Pi was held in Ames, IA, October 31-November 2, 2013. These 559 members represented 226 collegiate chapters and 20 alumni chapters on behalf of the entire organization. Of the total, 405 were students and 154 were alumni. Chapter Advisors totaled 48, all invited and most partially reimbursed by Tau Beta Pi. An additional 80 non-members guests, recruiters, and consultants participated in Convention activities and enjoyed the hospitality of Ames.

The Iowa Alpha Chapter was the official host of the Society's fifth annual meeting held in Ames. The Arrangements Co-Chairs were **Grant E. Anderson, IA A '14**, and **German A. Parada, IA A '13**, who led the host committees in such duties as transportation, publicity, souvenirs, and hospitality.

Headquarters for this Convention was at the Iowa State Center Scheman Building and the nearby Gateway Hotel. Six meals and two continental breakfasts were provided and all meetings were held in the Scheman Building or the Gateway Hotel. Comprised of 36 booths hosted by recruiters from graduate engineering programs and corporations, the Recruiting Fair enhanced Thursday's activities.

The Convention formally opened in the Scheman Building on Thursday afternoon. It closed on Saturday night with the Initiation and Awards Banquet in the Gateway Hotel—followed by dancing with a local DJ and casino games. Four business meetings were held, including Thursday's dinner session when the President's Report for the Executive Council was presented and ending with the business actions on the final banquet program, when the 2013 Tau Beta Pi Laureates, Distinguished Alumnus, and chapter award winners were honored.

Special events included a Thursday costume social, a showing of the movie *Pandora's Promise* by producer **Ray A. Rothrock, TX Δ '77**, and Leslie Dewan, and a special session of "Managing your Investments for Retirement" by **Harry W. Lange, MI Z '75**, and **Rodger F. Smith, WI A '64**. **Gwenne A. Henricks, IL Δ '81**, vice president of product development and global technology and chief technology officer at Caterpillar, Inc., served as the keynote speaker at the Welcoming Dinner and **Ralph A. Rockow, OH Γ '58**, founder and president of Exodyne, served in the same capacity at the Initiation and Awards Banquet on Saturday evening.

Almost all business at TBPi Conventions is handled by committees. Seven standing committees are called for in the Constitution, six *ad hoc* committees were appointed, and every collegiate chapter voting delegate served on a group.

Full details of the business meetings are recorded in the official minutes and in detail in the December 2013



All Convention photos by Raymond H. Thompson.

The napkin tradition at the final banquet, with Engineering Futures Facilitator and Executive Councillor-Elect J.P. Blackford, *DC Gamma '95*.

Bulletin (www.tbp.org). Major actions of the Convention are reported in this article.

One New Chapter Granted

In response to a petition received during 2012, one new collegiate chapter of Tau Beta Pi was granted by the Convention. The successful petitioner was the local engineering honor society at the University of Texas-Pan American. The society was represented by one advisor and five student officers. Installation ceremonies are planned for Texas Nu on February 1, 2014. This will raise the number of active collegiate chapters to 242.

Constitution & Bylaws

The Constitution and Bylaws Committee diligently worked through four amendment proposals and endorsed a plan to appoint a committee to conduct a general revision to the Constitution and Bylaws over the next two years.

The Convention adopted, by the required vote, four amendments recommended by the committee. Final approval of these changes is subject to chapter ratification.

1. Amend Constitution Art. VI, Sec. 6 and Bylaw V, Sec. 5.03 (f) to eliminate the collegiate chapter office of Cataloger.
2. Amend Constitution Art. III, Sec. 2 to include the Director of Alumni Affairs as a voting member of Convention.
3. Amend Constitution Art. IV, Sec. 2 (g) (5) and Bylaw III, Sec. 3.07 to eliminate the duplicate description of the duties of the Director of Alumni Affairs.
4. Amend Constitution Art. III, Sec. 2 (h) and Bylaws I,



Sec. 1.05; III, Sec. 3.01 (e) (11); V, Secs. 5.03 (e) (1) and 5.04 (c) to eliminate the separate Convention assessment and include it in the initiation fee.

Financial Affairs

Understanding the complexity of Tau Beta Pi's financial status presents challenges to students, but the Chapter and Association Financial Affairs Committee democratically reviewed all financial matters and concluded that the Association's financial health is in proper order.

The committee recommended, and the Convention adopted, specific allowable Convention expenses beyond those specified in the Bylaws for delegates to the 2014 meeting. The group worked effectively with chapters to resolve debts and reviewed the 2012-13 reports of the Society's auditor and Executive Director and the budget for 2013-14.

The committee recommended, and the Convention adopted, increasing the initiation fee from \$32 to \$38 with a \$7 Convention assessment or from \$32 to \$45 without the \$7 Convention assessment. The exact breakdown of the increase is contingent on the Constitution and Bylaws amendments regarding the Convention assessment, and the increase will take effect August 1, 2014.

The committee also recommended that a committee be appointed to examine publishing options for *The Bent*.

Initiation

The Rituals Committee organized an impressive model initiation ceremony in Benton Auditorium in the Scheman Building for ten students and two eminent engineers of Iowa Alpha as well as one Sigma Tau initiate from each of the Nebraska Alpha and South Dakota Alpha Chapters. The Convention made four wording changes to the Ritual.

Awards

The Awards Committee worked long hours in reviewing the 2012-13 records of the chapters and in selecting the recipients of the R.C. Matthews Outstanding Chapter and the R.H. Nagel Most Improved Chapter Awards. Announcement of these awards, the J.D. Froula Most Improved Membership Award, and the 10 honorees of the Chapter Performance Scholarship Program are reported in detail on pages 24-25.

2016 Convention & Beyond

The Convention approved a new procedure for selecting

future Convention sites. The goals of the new process include allowing more students to attend Convention, providing facilities that can easily accommodate the size of the Association, reducing costs per person, providing a good experience for attendees, and growing the number of alumni and industry representatives. The Executive Council will provide chapters with additional information later this academic year.

2013 Tau Beta Pi Laureates

The attendees enjoyed both meeting and hearing about the diverse achievements of Laureates **Darick W. LaSelle**, *CO E '13*; **Benjamin B. Macy**, *IN A '13*; and **Adam R. Pizzai**, *NJ B '13*; Vice President Solange C. Dao presented commemorative plaques and \$2,500 checks to each. **Michael R. Lacey**, *SC I '13*, and **Glenn M. Miltenberg**, *CO Z '13*, were unable to attend.

Tau Beta Pi-McDonald Mentor

The delegation met and learned about 2013 McDonald Mentor Lt. Col. **Donald W. Rhymer**, Ph.D., *CO Z '94*, professor and department head of engineering mechanics at the United States Air Force Academy. Councillor Norman Pih presented his commemorative medallion, \$1,000 check, and another \$1,000 for his chapter.

Outstanding Advisor

All were pleased to meet the 2013 Outstanding Advisor **Bruce L. Walcott**, Ph.D., *IN A '81*, professor of electrical and computer engineering at the University of Kentucky, where he serves as Chief Advisor to the Kentucky Alpha Chapter. He has served as Chief Advisor for 15 years. President Simonson presented \$1,000 and a commemorative plaque to Dr. Walcott and another \$1,000 for the University of Kentucky's college of engineering's discretionary fund.

Distinguished Alumnus

The attendees enjoyed hearing the career accomplishments of 2013 Tau Beta Pi Distinguished Alumnus **M. Lucius Walker Jr.**, Ph.D., P.E., *DC A '57*. He served as professor emeritus of mechanical engineering and former dean of Howard University's engineering school. President Simonson recognized him posthumously and presented a commemorative plaque to his family, and a TBP scholarship of \$2,000 will be given in his honor to a student this spring.



Chapter & Professional Development

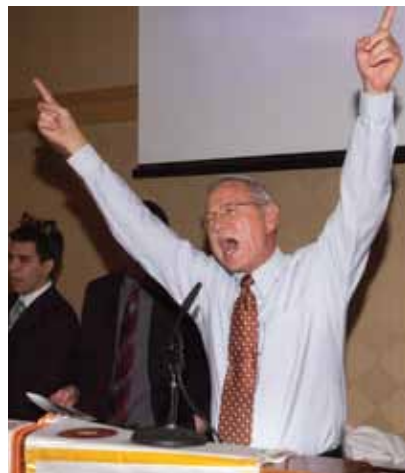
The Chapter Development Program included excellent Interactive Chapter Exchanges (ICE), Engineering Futures sessions, and District meetings. Many delegates expressed appreciation for the usefulness of the exchanges and the EF sessions. This year saw the expansion of the professional development sessions conducted in parallel to the Recruiting Fair and campus tours on Thursday morning and afternoon. Attendees arriving early were able to select from 17 different sessions ranging from “Nailing your Job Interview” to “The Elevator Speech: Your 15 Seconds of Fame.”

2014-18 Executive Council Elected

The Executive Council of the Association for the 2014-18 term was chosen from two nominated slates. The Elevate Slate was nominated by the Florida Epsilon Chapter and the Wolverine Slate was nominated on the floor of Convention. Each group was introduced, made presentations, and stood for secret-vote election on Saturday morning.

The Elevate Slate was elected. Its members are **Joseph P. Blackford**, *DC F '95*, **Susan L.R. Holl**, Ph.D., *CA A '76*, **George J. Morales**, Ph.D., *FL E '06*, **Alan J. Passman**, *FL A '06*, and **Norman Pih**, *TN A '82*.

The new Council will officially assume office at the 2014 Convention. Until then, the Council-elect will become familiar with its leadership responsibilities as Tau Beta Pi's board of directors.



Executive Director Emeritus James D. Froula, P.E. (ret.), *TN A '67*, leads the Convention in the traditional yell.

Other Business

The *ad hoc* Alumni Chapters Committee met to discuss best practices and what constitutes an active alumni chapter. They recommended that a working group of alumni be established to revisit the Distinguished Alumnus program.

The *ad hoc* Chapter Advisors

Assisted by . . .

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University College of Engineering
Northeastern University
Northwestern University
McCormick School of Eng'g & Applied Science
Parks College-Saint Louis
University
Purdue University
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Whitacre College of Eng'g
University of Florida
College of Engineering
University of Kansas,
School of Engineering
University of Michigan
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University of Pennsylvania
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Vanderbilt School of Engineering
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The PhD Project

Committee met to discuss the benefits and incentives of being an advisor and started a pilot Chapter Advisor Mentoring Program. The committee reported that new advisor training was conducted.

The *ad hoc* Curriculum Review Committee examined appeals by two chapters to include two non-ABET/EAC curricula in their bylaws as eligible curricula for new members. The Convention granted the appeals from the Texas Eta and the Nevada Beta Chapters to consider their computer science programs as eligible curricula.

The *ad hoc* Image Review Committee provided recommendations regarding insignia and image items and provided a prioritized list of new items to offer to members. The committee also recommended that standardized electronic materials be developed for chapter use, a uniform image be utilized throughout all items, and a

(Continued on page 24)

Association Awards

Three-Pointer for Kentucky Alpha

Wildcats Sweep the Board

For the first time in Tau Beta Pi history, the R.C. Matthews Outstanding Chapter, the R.H. Nagel Most Improved Chapter, and the J.D. Froula Most Improved Membership Awards went to the same chapter—**Kentucky Alpha** at the University of Kentucky.

The Awards

The Awards Committee stated that Kentucky Alpha fulfilled the objectives of TBPI over the past few years through "unprecedented growth in membership, community outreach, and campus involvement." The chapter conducted a total of 35 projects. Members planned and participated in a wide range of activities ranging from a family math night to cancer education during prevention awareness week. They have worked to improve the chapter's image on campus while also supporting the national organization which included hosting the 2012 Convention.

They continued with one of their most successful activities—a Monte Carlo casino fundraiser which allows students to relax after midterms and connect with faculty outside the classroom. The chapter was committed to the event and reorganized their efforts to improve on an event that initially only had five people attend and actu-



Awards Committee Chair William A. Michelin (center) presents the Most Improved Chapter Award to representatives from Kentucky Alpha: (left to right) 2012-13 President Adrienne L. Shearer, 2013-14 President David L. Smith, Voting Delegate Cody M. Lonsbury, and Chief Advisor Bruce L. Walcott.

ally cost the chapter money. The following year, over 50 people attended, and it is now an annual tradition with large turnouts.

Kentucky Alpha leaders for 2012-13 were President Adrienne L. Shearer, Vice President Sean C. Karlage, Treasurer David S. Spencer, Recording Secretary Kathryn D. Gardner, Corresponding Secretary Laura M. Martin, and Cataloger Forrest M. Simmons.

Advisors were Bruce L. Walcott, Ph.D. (Chief), Dibakar Bhattacharyya, Ph.D., Kassy M. Lum, and William E. Murphy, Ph.D., P.E.

Honorable mentions for the R.C. Matthews Award went to **Alabama Epsilon** at the University of South Alabama and **Ohio Iota** at Ohio Northern University. An honorable mention for the R.H. Nagel Award went to **Florida Epsilon** at Florida Atlantic University.

Tau Beta Pi's 108th Convention

(Continued from page 23)

professional image consultant be hired to update current materials.

The *ad hoc* MindSET Committee thoroughly reviewed the status of the K-12 MindSET Program. The committee revised and clarified the MindSET grant program, suggested organizational enhancements to the website, and recommended a facilitator program be developed.

The *ad hoc* Chapter Website Committee reported on progress to revise the TBPI website. The committee recommended that the electronic reporting system be updated.

Finally, the Resolutions Committee was responsible

for preparing resolutions thanking the host chapter members, officials, generous alumni and sponsors, award winners, Headquarters staff, volunteers, and others for all the good things that happened to Tau Beta Pi during the year and closing the Convention with a succinct inspirational message to the delegates, concluding as follows:

In looking around this very room, and looking over this impressive list of names, I am amazed that I have the opportunity to stand among such engineering giants. Thank you for your time tonight and this weekend. We look forward to seeing you at the 2014 Convention in Spokane, hosted by Washington Delta at Gonzaga University.

2013 Convention

62 Chapters Recognized

Assistant Secretary Roger Hawks presented commendations to these chapters for membership improvements in 2012-13:

Alabama Delta	Indiana Epsilon	New York Tau
Alabama Epsilon	Kentucky Alpha	North Dakota Beta
Arizona Beta	Louisiana Beta	Ohio Epsilon
California Gamma	Louisiana Gamma	Ohio Eta
California Zeta	Louisiana Epsilon	Ohio Iota
California Omicron	Massachusetts Alpha	Ohio Nu
California Sigma	Massachusetts Delta	Ohio Xi
California Upsilon	Massachusetts Iota	Oklahoma Beta
California Phi	Michigan Delta	Oregon Gamma
California Chi	Michigan Zeta	Pennsylvania Epsilon
California Omega	Michigan Theta	Pennsylvania Zeta
CA Alpha Gamma	Michigan Kappa	Pennsylvania Eta
CA Alpha Epsilon	Minnesota Alpha	Pennsylvania Kappa
Colorado Delta	Missouri Gamma	Rhode Island Beta
Colorado Zeta	Montana Beta	South Carolina Gamma
Connecticut Alpha	Nevada Beta	Vermont Alpha
DC Beta	New Hampshire Beta	Vermont Beta
Georgia Beta	New Jersey Delta	Virginia Delta
Illinois Gamma	New Mexico Alpha	Virginia Epsilon
Indiana Gamma	New Mexico Gamma	Wisconsin Beta
Indiana Delta	New York Alpha	

\$5,000 in Scholarships

Eleven chapters, each of which have won Chapter Project Awards for three consecutive years, won \$500 scholarships.

CHAPTER	INSTITUTION	DELEGATE
ALABAMA EPSILON	UNIVERSITY OF SOUTH ALABAMA	TIMOTHY J. BATTLE
CALIFORNIA ALPHA	UNIVERSITY OF CALIFORNIA, BERKELEY	ERIK P. BERTELLI
CALIFORNIA EPSILON	UNIVERSITY OF CALIFORNIA, LOS ANGELES	GRACE E. KIM
FLORIDA ALPHA	UNIVERSITY OF FLORIDA	EMILY A. HESTER
GEORGIA ALPHA	GEORGIA INSTITUTE OF TECHNOLOGY	MANAN S. GANDHI
IOWA ALPHA	IOWA STATE UNIVERSITY	KATHERINE M.S. BROWN
MICHIGAN GAMMA	UNIVERSITY OF MICHIGAN	RYAN CHEN
MINNESOTA ALPHA	UNIVERSITY OF MINNESOTA—TWIN CITIES	JACK W. NEBEL
OHIO IOTA	OHIO NORTHERN UNIVERSITY	MICHAEL P. SUNYAK
SOUTH CAROLINA ALPHA	CLEMSON UNIVERSITY	SERGEY P. BELOUS
TEXAS ALPHA	UNIVERSITY OF TEXAS AT AUSTIN	DAVID A. BABIN

26 Chapters Commended

Executive Director Curt Gomulinski presented commendations to these chapters for punctual Headquarters reports in 2012-13:

Alabama Alpha	Iowa Alpha	Ohio Mu
Alabama Epsilon	Kentucky Alpha	Ohio Nu
Arizona Gamma	Michigan Beta	Oregon Gamma
California Theta	Michigan Gamma	Puerto Rico Alpha
California Xi	Michigan Kappa	South Carolina Alpha
California Tau	Nevada Beta	South Dakota Alpha
California Omega	New York Gamma	Washington Delta
DC Alpha	Ohio Eta	Wyoming Alpha
Florida Epsilon	Ohio Iota	

Special Thanks!

Tau Beta Pi would like to recognize those who led professional development sessions:

Advisors Can Help You!

Barry L. Frost III, *MI A '93*
Patrick D. Homen, *CA Y '85*

Business Etiquette

Solange C. Dao, P.E., *FL A '95*

The Elevator Speech

Ronald M. Hickling, *CA E '80*

Engineering Your Career Identity

Joey P. Wilson, Ph.D., *FL A '07*
Teach for America

Ethical Decisions

Jonathan F.K. Earle, Ph.D., P.E., *FL A '65*

K-12 MindSET & Teacher Training

Thomasenia L. Adams, Ph.D.
University of Florida

Lyle's Law for Leadership

Lyle D. Feisel, Ph.D., P.E., *IA A '61*

Managing Your Investments for Retirement

Harry W. Lange, *MI Z '75*
Rodger F. Smith, *WI A '64*

Move Up the Ladder

Christina M. Harrison, *TN A '93*

Nailing your Job Interview

Scott E. Fable, *CA T '96*

Office Politics

George Youssef, *NJ T '01*

Nuclear Technology of The Navy

Lt Tristan M. Glodeck, USN, *SC B '09*

Problem Solving with Mom

Rebecca Davis, TBIT Headquarters

Should I go to Graduate School?

Bruce Lindvall, Ph.D.
Northwestern University

Stand Up and Speak Out

Steven J. Battel, *MI T '79*

Winning a Fellowship & Scholarship

D. Steven Pierre Jr., P.E., *AL E '90*

Working with Alumni

Tricia E. Gomulinski, *SD A '98*

24 Chapter Project Awards

At the 2013 Ames Convention, Chapter Project Awards for outstanding performance during 2012-13 were presented to the to the following chapters:

Ray Thompson, TBIT

CHAPTER / INSTITUTION	NO. PROJECTS	CHAPTER / INSTITUTION	NO. PROJECTS
AL E University of South Alabama • Held an Order of the Engineer ceremony • Organized BEST Robotics workshops	23	MI Γ University of Michigan • Helped to remove invasive plant species • Conducted a MindSET project in South Africa	54
CA A University of California, Berkeley • Helped restore Berkeley Rose Garden path • Showed how a trebuchet can throw a pumpkin	96	MI Θ Oakland University • Collected food and \$276 for Gleaners Food bank • Held an engineering Halloween party	32
CA E University of California, Los Angeles • Helped under-privileged schoolers with computers • Showed elementary students what engineers can do	39	MI K Western Michigan University • Constructed a wheelchair ramp • Hosted Fermi Questions as part of Science Olympiad	11
CA AB University of California, Riverside • Helped at a soup kitchen • Participated in a Q&A for Upward Bound	23	MN A University of Minnesota—Twin Cities • Painted a section of the U of MN bridge • Helped 'Feed My Starving Children'	16
CO A Colorado School of Mines • Were 'Up 'Til Dawn' writing letters for St. Jude's • Conducted trebuchet competition for E-week	29	NY Γ Rensselaer Polytechnic Institute • Cooked and served meal at Joseph's House & Shelter • Organized and ran Engineering Feud	17
DC A Howard University • Helped 'Introduce a Girl to Engineering' • Graded tests for MATHCOUNTS	19	NY T Binghamton University • Helped with Boo at the Zoo • Held popsicle stick earthquake test for schoolchildren	45
FL A University of Florida • The original MindSET—Gator Trax • Organized a series of FE reviews	29	NC A North Carolina State University at Raleigh • Tutored at Boys and Girls Club • Went 'Harvesting for the Hungry'	17
FL E Florida Atlantic University • Organized Mind Storm kits for Scout badge • Conducted a MindSET session for third graders	22	OH A Case Western Reserve University • Conducted annual bookswap raising over \$1,000 • Held Core Crams to help fellow students with exams	20
FL Θ Florida International University • Helped clean up the Miami zoo • Judged at a Future City competition	41	OH I Ohio Northern University • Decorated Ada Park with Christmas lights • Went trick-or-treating to help Food Pantry	33
GA A Georgia Institute of Technology • Held educational contests for E-week • Provided one-on-one tutoring for children	27	SC A Clemson University • Hosted Engineering Expo for Eng'g & Science Week • Inspired middle/high schoolers E-magine Your Future	11
IA A Iowa State University • Adopted a highway • Helped 'Build the Future' for middle schoolers	35	TNI Tennessee Tech University • Helped clean up campus • Served during the haunted half-marathon	15
KYA University of Kentucky • Hosted the 2012 Convention • Assisted at the Future Lego League Regional	27	TXA University of Texas at Austin • Collected trash along Shoal Creek • Took care of abandoned pets at Austin Pets Alive	61

2013 Alumni Giving Program August-October Contributors

The names of an additional 562 Tau Beta Pi alumni who made donations to the Association in the 2013 Alumni Giving Program appear in two separate sections on the following pages. Their gifts totaling \$82,944 arrived between August 1 and October 31, 2013. **Gifts received after October 31st do not appear here but will be published in the Spring 2014 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 last 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 the gifts acknowledged here, several were made anonymously through the Combined Federal Campaign, Network for Good, or JustGive and are also deeply appreciated.

Donor Recognition Clubs

The names of 430 Tau Bates appear in this first section. They made donations to the 2013 Alumni Giving Program between August 1 and October 31, 2013, 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		

ALPHA CLUB

MI Z Lange, Harry W. '75

BETA CLUB

GAA Batts, Warren L. '61
LA † Kitchens, Philip Hudgins '67
NYE Maniscalco, Thomas L. '67
TN † Hall, Kristofer Brian '98
TX H Trich, John Albert '70

DELTA CLUB

CA E Hickey, Robert William '88
NJ † Kenney, Thomas E. '70
OH † Holl, Barton S. '48
PA † Barrow, Bruce B. '50
VAB Hogan, James Campbell '70

ZETA CLUB

ARA Gunderman, Tony R. '89
CAB Hammer, David A. '64
CA † Fowle, Mark C. '76
CA Δ Cozens, Eric Trevor '48
CA E Sipma, Dale M. '67
CA Z Fisher, Dean Lawrence '75
CO A Hickman, Richard Leo '65
DE A Hyer, Frank S. '58
IL B Jaras, Anthony A. '67
Lewis, Ted Howard '68
IN A Reitz, Richard A. '63
Vosteen, Louis F. '52
MI A Colbry, Ph.D., Dirk Joel '06
Colbry, Ph.D., Kathleen L. '99
MI † Sarns, Richard Norman '76
MI A Dietrich, Robert W. '57
Klimaszewski, Richard A. '65
Wittman, Bernard A. '64
MTA Carlson, Gene S. '64
NJ B Carey, Mark '77
NYB Phillips, Glen E. '71
NCA Appel, Richard Joseph '97
OHA Markuson, Donald Miner '80
Rasbold, James Charles '83
OHE Taber, Margaret S. '58
PA A Diemer Jr., R. Bertrum '73
PA † Robb, Frank J. '73

SC A Jones, Walter F. '78
TN A Cook, James Michael '72
Slaughter, Joseph T. '65
TX B Ingram, Wesley W. '77
VAB Adams III, George B. '78
Berk, Benjamin C. '72

CHI CLUB

AL B Kennedy, Lisa '82
AZ B Davis, John F. '93
Jackson, Stephen R. '90
CA A Magyary, Andrew '65
Robson, Clayton William '58
CA † Dohner, John W. '72
Taniguchi, Brian Yoshito '77
CA E Getzinger, Richard W. '60
CA Z Antush, Richard Michael '75
CA H Battersby, Leslie Charles '98
CA A Hafer, Edward H. '70
Hall, Victoria Lee '86
CA P Owens, Lawrence P. '82
CO A Peters, Richard Duane '80
CT A Saubestre, Paul A. '79
CT B Leib, David Bernard '61
Tylaska, Theodore T. '85
Dao, P.E., Solange C. '95
FL A Passman, Alan Joseph '06
FL B Sipes, Alesia Jones-Parra '84
IL A Beamblossom, Todd M. '80
Ditman, Jason Blair '91
Knox, Thomas D. '86
IL † Fenton, Suzanne S. '79
IN A Blythe, James Edwin '50
Enochs, Iddo L. '50
Nemier, Stanley E. '63
Novy, Ph.D., Robert A. '85
IN † Lane, James K. '82
Richter, Richard T. '70
IA A Parris, Stephen W. '75
KS A Heiny, Richard L. '50
Smith, Ricky D. '83
KS B Wilson, Bryan Keith '85
KY A Upshaw, Wayne S. '65
LA B Ibele, Warren E. '44
MDB Loger, Jaan A. '63

MAA Valencia, Jaime Alfonso '74
Gudewicz, Thomas Michael '78
Roya, James Edward '92
MAB Martel, Philip Omer '72
MAE Frost, George C. '50
Ridlon, Stephen Allan '66
MAZ Grzeslak, Kazimierz T. '88
MAH Duda, James A. '84
MI B Bohrer, Timothy H. '71
Korpi, Mary Beth '76
MI † Drago, Gary A. '75
Finnegan, Patrick M. '57
Williamson III, Warren P. '53
MI Δ Di Cicco, Dominic A. '61
Ponticello, John Charles '78
MI Z Steffe, Alan K. '68
MNA Petesch, Douglas J. '84
MOA Brownfield, David Lee '68
Merz, Jeffrey B. '67
MOB Schwent, Dale Gerard '84
MT A Hammel, Allan K. '51
NE A Gilbreath, Donald R. '85
NV A Wigchert, Albert Henry '74
Compton, Joanne B. '79
Schmidt, Arthur Joseph '68
NJ B Rabin, Daniel E. '73
Rodgers, Douglas Noss '67
NJ † Dehn, Rudolph Albert '41
NYB Prach, Edwin Frank '50
NY † Brand, Terrance Alan '90
Levinson, Stanley H. '78
Dougherty, John W. '59
NYE Boyarsky, David '59
NY † Kaylor, James M. '88
NY † Fischer, George Andrew '54
NYM Czuba, John Stanley '78
NYE † O'Keefe, Luke Francis '80
OHA Gschwind, Leon Donald '55
Holcomb, J. Eric '82
OHB Hagedorn, Donald E. '66
OH † Cowan II, Robert Lee '54
Hollenbaugh, Roger E., '71
Kerstetter Jr., John H. '49
Kovach, Carl David '85
March, Michael Ross '85

Overmyer, Ray A. '73
Pass, Brian C. '86
OHA Miller, Truesdell C. '64
Wisnar Jr., H. Robert '52
OH H Lantier, Ward J. '63
Sweeder, James '82
OH † Fuemmeler, Jason Alan '00
OK A Lovering, Eugene H. '43
OK † Diggs, Robert Allen '74
ORA Milton, Stuart W. '84
PA A Brownlie, Thomas John '71
Hopkins, Richard Henry '63
Lentz, Robert R. '65
PA † Cavalier, Nina Leslie Koros '89
Cavalier III, Forrest J. '89
PA E Richards, Gerald T. '57
Smith, Richard P. '77
PA A Schurko, Robert J. '78
RI A Pezzutti, David A. '69
Steen, Paul H. '75
Vigar, Judith W. '83
RI B Binns, George '59
SC A Rushton, Floyd R. '63
SC † Geentjens Jr., P.E., Gaston P. '56
Mello, William James '97
TN B Bass, Jay K. '87
TN A McLeod, Jeffrey Keith '83
TX A Bethell, William Decatur '45
Carroll, Billy D. '64
TX B Darby, Mark L. '79
Stinson, John M. '66
TX † Capshaw, David M. '80
TX A Coman, Paul Daniel '08
TX E Wuensche, Frederick R. '72
TX H Totten, Dwight L. '66
Worden, Ph.D., Sue Janine '78
TX † Stokes, F. Xavier '77
VA A MacKay-Smith, Alexander '59
WA A Welsh, Bryan D. '87
WA B Oakley, Fanning Tucker '53
WV A LeMasters, Jerry Ray '63
WV B Ashman, Michael D. '84
WY A Fasset, P.E., Gordon W. '74
Hand, M. Maureen '94
Schoenborn, P.E., Renee M. '85

SECOND CENTURY CLUB

AL B Nicholson, William R. '73
AZ B Sirkis, Murray Donald '51
CA A Silverstone, Michael S. '66
CA † Gordon, Ph.D., Matthew H. '86
CA A Hedin, Richard A. '69
CA E Miller, Wendell Roger '80
CA A Sturgeon, William Randall '70
CA M Beard, David Charles '91
Hom, David G. '92
Yoshida, Todd '84
CA † Stewart, Diana F. '83
CA † Rubino, Kimberly Christine '95
Shetler, Joy Susan '90
CO A Crichton, David Drewry '97
Crisi, Robert G. '84
Haycraft, Thomas Wayne '73
CO B Englund, James S. '41
Horrell, Robin S. '85
Sallyards, Donald Gene '52
FL A Charlton, John Dunaway '72
Perrygo, Charles M. '75
Vande Vusse Jr., Gerald '65
FL Z Steward, Robert Austin '54
GA A Kuske Jr., John A. '61
Schleicher, Kathy L. '85
IL B Johnson, J. Randall '63
IL † Ferraro, Anthony S. '59
Smith, Howard Wayne '65
IL E Wasylezak, Michael J. '75
IN A Anderson, Kenneth R. '88
Davis, Duane M. '55
Johnson, David H. '63
LA Duc, John T. '65
Pickett, Leroy K. '68
Schwiesow, Ronald L. '62
Weakley, Thomas L. '55
IN B Johnson, William B. '60
IN A Hartman, Richard C. '63
IA A Ellingrod, William W. '54
Owens, David Andrew '91

SECOND CENTURY CLUB, CONTINUED

- IA B Rustwick, John D. '71
- IA B Monk, David H. '60
- KS I Boguski, Terrie K. '81
- KYA Davis Jr., Lewis Berkeley '66
- † Perry, Hal Gordon '57
- LA A Levert Jr., Freddie J. '62
- LA I Stephenson, Jon P. '68
- MEA Richardson, Paul Walter '56
- MDB Anonymous '77
- Kanofsky, Hal S. '70
- MAB Aldrich Jr., Hari P. '47
- Bennett, Kenneth Harold '89
- Brooks, Donald Henry '49
- Denhard, William G. '42
- Ellison, William T. '68
- MAA Green, Samuel Herman '51
- MAE Williams, Charles R. '53
- MAZ Lynch, David P. '82
- MI B Dejonge, Michael Kent '65
- Hutula, David Norman '66
- MI I Goodell, Charles Edward '43
- Iler, Gerald Walter '49
- Malloch, Charles Delridge '57
- Stagner, Charles E. '86
- MI E Keller, James S. '60
- MI Z Gillham, Gregory V. '83
- MSA Bufkin, Jimmie A. '70
- Sutphen, Fred M. '73
- MOI Saufnauer III, John '61
- MTB Jackson, Darron Boyd '86
- NHA Major, Alfred N. '50
- Zecchini, Charles R. '50
- NJ A Berendsen, Charles G. '51
- Foster, Thomas H. '83
- NJ B Kaufman, Peter Andrew '84
- Tanner, Robert Brand '64
- NJ I Cordes, Robert G. '48
- Hsu, Cheng-Tzu Thomas '64
- Moeller, Peter Allan '78
- Youssef, George '01
- NJ A Garing, John Davis '80
- NMA Havens Jr., Kenneth H. '78
- Smith, B. Wayne '88
- NYB Landau, Louis Herbert '49
- Ragonese, Louis John '56
- NYI Fredericks Jr., Robert J. '48
- Gardner, John H. '66
- Hirschman, Gordon Bradley '78
- Krause, Alfred F. '52
- NYA Harris, Dennis George '70
- NYO Randall, Paul William '92
- NCA Alexander, Ralph B. '76
- Davis, John Michael '73
- Wicker, Robert E. '74
- NDA Geller, Harry '50
- OHA Herndon, Steven B. '79
- OHB Laney, Robb T. '88
- Wood, Ronald Eugene '89
- OHI Armstrong, Robert James '51
- Latimer, Trent W. '57
- Thrush, Thorle '48
- Zupancic, Michael Alan '87
- OHA † Lytle, James Richard '51
- OHH Shine, Andrew J. '46
- OHO Sink Jr., Robert Dean '87
- OH K Kult, Milton L. '52
- OH A Nicalek, Richard Allan '76
- OK I Lewis, William Jeffrey '84
- Pratt, David B. '77
- OR A Arant, Eugene Wesley '43
- Jones, Donald Paul '65
- PA A Link, Roderick W. '44
- Morse, Norman Lester '40
- PA B Matthias, Tracey D. '89
- PA I Kornuta, Nick Joseph '81
- PA E Ziegler, Donald Allen '52
- PA O McLaughlin Jr., Philip V D '61
- PA A Fitzpatrick, P.E., Anthony '03
- RI A Solomon, John V. '60
- SD A Berggren, Mark Harry '76
- TN A Roberts, P.E., Nancy R. '76
- TN E Cliner, Charles E. '82
- TX A Anderson, John E. '57
- Luevano Jr., Richard '83
- TX B Osborne, David C. '61
- TX I Chisholm, Roy Davies '48
- TX A Beers, David E. '69
- TX H Norwood Jr., Edwin B. '67
- TX A Schultz Jr., Alvin Frederick '73
- UT A Dewey, William A. '67
- VAA Powell, Joseph Broun '78
- VAB Gibbins, Martin Neil '78
- WA A McHenry, John Patrick '62
- WV A Hargett, Donald R. '65
- WI A Martinson, Lloyd William '57
- McNamara, Robert Tucker '62
- Trnka, John Thomas '69
- WY A Carroll Jr., William Edward '69
- Scharton, Craig A. '85

FOUNDERS CLUB

- AL B Moyer, Robert E. '65
- AZ A La Roche, David F. '86
- ARA Magness, Joe D. '55
- CA A Bocast, Donald R. '45
- Lin, Gene Chin '91
- † Marron, Hal Emmett '49
- CA A Salin, Irwin '48
- Woyshner, David Joseph '84
- CA E Farr, Roger D. '78
- Zarin, Oren '95
- CA H Graber, Robert N. '58
- CA E Johnson, James A. '83
- CA E Libby, Jean M. '80
- CO A Mikes, Kathryn F. '87
- Schneider, Randolph Paul '71
- CO B Fernau, Scott A. '83
- CO Z Bridges Jr., Roy Dubard '65
- CT A Ljung, Michael Allen '92
- CT B Chiarella, John G. '60
- DE A Witt, Jeffrey L. '81
- DCB Moeller, Mitchell Glen '85
- FL A O'Steen, James K. '67
- FL B Ross, Martin Cavanagh '76
- FL I Hovjacky, Steven John '95
- FL E Ware, Mark A. '85
- FL Z Thorpe, Gary Anthony '01
- IL A Allen, Charles H. '66
- IL I Herman, Richard N. '55
- Williams, Molly Wells '63

COMBINED FEDERAL CAMPAIGN

Tau Beta Pi has been included as an eligible organization on the 2013 Combined Federal Campaign (CFC) national list. The CFC is the annual workplace fundraising drive conducted by federal employees and military personnel each fall, which raises millions of dollars benefiting thousands of nonprofit charities. Tau Beta Pi has participated since 2000.



Tau Beta Pi will appear in the listing of National/International Organizations which is published in each local campaign brochure. Your donation will be directed to Tau Beta Pi by using the CFC identification number 10960.

In previous years, our Association has received thousands of dollars annually from this campaign. Unfortunately, the many local agencies gathering donations for the campaign are not able to provide us with the names of all the donors. Because of this, a donation made through this campaign may not be included in a member's giving record. Please know that the contributions are used to support the Fellowship, Scholarship, Laureate, and District Programs.

Thank you to all who have contributed to Tau Beta Pi through this campaign!

- IN A Hauger, Gregory L. '78
- MOA Magee, Thomas Henry '51
- MOB Duderstadt, Edward Charles '58
- Friedman, Marc Andrew '00
- Kyser, Dale Anthony '83
- IN I Collean, William T. '83
- Silho Jr., Charles B. '65
- IA A Philipp, Bruce Edward '63
- KS A Hinton, Robert A. '61
- KS I Kottwitz, Donna D. '75
- Scarborough, Kirk Delbert '82
- LAB Heaney, Brian P. '83
- LA E Leonik, Krzysztof C. '91
- MDA Birx, Donald L. '44
- Kutcher, Susan Weller '89
- MDB Noppenberger, Thomas M. '59
- MAA Wye, Roger E. '51
- MAB Greenspan, Marshall '61
- Lawes, Charles Peter '58
- Lord, Robert Leo '51
- MI A Hills Sr., Richard E. '61
- MI I Islip, Philip N. '79
- Mohsberg III, Sidney A. '71
- Schmueser, David W. '80
- MI A Huebner, Charles A. '58
- MI O Kaiser, Stephen G. '76
- MNA Behrens, Darrin Scott '98
- Lucking, Rachel M. '85
- Osen, John Walter '81
- Ronkainen, James William '85
- MOA Lopez, Angel '65
- OHA Churchman, Joseph Sailer '67
- OH I Howe, James G. '87
- OH O Beck, Charles William '62
- OH M Michalak, Travis Edward '03
- PA A Stanley, Richard A. '63
- PA B Walker, Kurt Melvin '77
- PA I Polefik, Allen J. '71
- PA A Yaccarino, Robert G. '85
- PA E Flynn, Susan M. '79
- PA Z Talecki, Stephen A. '76
- PA H Coultter, David James '74
- PR A Santana, Juan Carlos '97
- Velazquez, Marina D C '81
- SC B Rippy, Crystal D. '93
- Wilson, Samuel Scott '91
- SD A Beck, Carl William '83
- TN B Huddleston II, Charles L. '83
- TN E Cook, Justin Doug '01
- Faries, Guy Lawrence '96
- TX A Seaman, George Cook '66
- Wong, Lucas '84
- TX A Chaput, Armand J. '63
- Murphy, Prahlad N. '92
- Sturrock, John M. '72
- UT I Clyde, Eric S. '75
- WA A Perrault, William Richard '59
- WA A Bailey, Gardner S. '74
- WI B Searing, Lawrence Gilbert '73

In Grateful Appreciation of Member-Contributors

- AL B Atchley, Marcella R. '11
- FL O Thompson, Leroy Earl '56
- GA A Gurley, Thomas B. '59
- Weber, Eric D. '87
- IL A Whitlow, James Robert '63
- IN A Short, William R. '65
- Glenn, Richard A. '49
- Ichikawa, Ralph M. '57
- Jamieson, Leah H. '74
- Morris Jr., Thomas Arthur '51
- Shook, E. Graham '60
- Smith, Gary Roderick '86
- Straus, Leo '49
- Thornell, Richard E. '64
- IN B Reives, Thomas Scott '08
- IN I Bongiovi, Robert P. '69
- IA A Okishii, Theodore '60
- Schebler, Michael J. '69
- LA B Grusel, Fred B. '50
- KS A Cronemeyer, D.Sc., Donald '45
- KS I Stoll, Samson Otto '78
- Terrill, Scott Allen '04
- LA I Young, Charles W. '59
- MEA Evenson, Paul R. '85
- Miller, Stanley John '49
- Gannon, William F. '41
- Gilpin, Linda B. '86
- Radack, Daniel J. '83
- MDI Newman, Scott M. '84
- MAB Anderson, Martin D. '85
- Chandar, Venkat Bala '06
- Fichtenbaum, Matthew L. '66
- Fuhrman, Linda Robeck '86
- MAA Savage, Paul D. '77
- MAE Lamprey Jr., Arthur S. '52
- MAZ Unger, Joseph Karl '90
- MAH Lajoie, Ronnie M. '84
- Zuccaro, Jeffrey Richard '05
- DeMartins, Guy Bernard '08
- MI A Evans, Timothy Wendell '70
- MI B Evensen, Harold A. '61
- Jamar, John Woodbridge '52
- Kicinski, Stephen E. '59
- Rom, David B. '56
- MI I Gotham, Joseph O. '07
- Miller, Marlin Scott '81
- MI Z Luks, Andrew Gerald Eric '93
- MI K Pease, Caleb Allen '11
- MS A Cinnella, Pasquale '87
- MOA Delaney, Harold R. '49
- MOI Berger, Priscilla F. '83
- Berge, Roger L. '56
- Schmitt, Mark Alan '98
- NEA Fortik, Jason La Vern '98
- Pont, Adam Ray '04
- NVA Kaehler, Molly D. '00
- NHA Lizotte, Donna Lou '82
- NJ A Chiarello, David M. '66
- MacMillan, Robert N. '52
- NYA Croll, John William '12
- NYB White, Floyd '42
- NYI Rittelmann, Paul Richard '61
- Romeiser Jr., Malcolm B. '57
- NYA Barber III, James Laurance '07
- Gorgey, William Edwin S. '85
- Jauvits, Nathan Isaiah '99
- NYE Memmerich, Kenneth Arthur '65
- NYM Feldman, Brian Pearson '07
- NYN Guildford, Harry J. '52
- NYII Vandewark, Jason Stewart '93
- Olenik, Anthony Michael '08
- NCE Thompson, Renee C.D. '98
- NDB Wolf, Donald A. '53
- OHA Kuhlman, John Michael '70
- Thompson, William L. '60
- OH I Craig, Dwight R. '49
- OH E Steffes, Paul Randall '90
- OH Z Badik Jr., Thomas B. '85
- Cherol, Anthony James '12
- OH I Lowe, Robert Lindsey '03
- OK B Farris, Robert Sharp '72
- McKinley, Gordon Stuart '90
- OR A Mengis, Mateo Robert '09
- PA B Gray, Kevin T. '85
- Hogan, William Oliver '95
- Petruzzelli, Justin Dennis '99
- PA I Schneider, Christopher M. '06
- PA O Hilditch, John Michael '83
- Volkay-Hilditch, Christine '83
- PA I McGrann, Matthew Francis '01
- PA A Leptinsky, Mark Edward '87
- Needy, Kim L. '84
- TN A Stanfill, Ira C. '61
- TX B Davis Jr., Charles O. '67
- TX I Collins, Howard William '37
- Marshall, Tom S. '76
- TX A Barksdale, Donald Lee '55
- Somes, Brian '89
- TX I Pearson, David R. '65
- VAB Parrish, Harold E. '56
- Saucke, Debra Clark '81
- V A I Zachorian, Jaime Scott '05
- WA B Johnson, Katelyn Lee '08
- WA I Wong, Tommy S. H. '06

Special Gifts

Special gifts were received in memory of John R. Luchini, Ph.D., P.E., MI I '71 from Ms. Suzanne Breniser; Mr. William V. Mars, OH K '94; Mr. Richard A. McKee & Mrs. Lori A. Simonelli McKee; Mr. Michael T. Ponting, OH Z '05, & Mrs. Nan Ponting; Mr. Howard S. Roger; Ms. Meghan M. Schumaker; and Kenneth Wyckoff, Ph.D.

Gifts were also received in memory of Mr. Hal G. Perry, KY A '57, from his wife, Mary; Mr. James R. Lytle, OH A '51 from his wife, Mary; and Mr. Hal E. Marron, CA A '49 from his wife, Mrs. Marron.



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 further facts concerning the following deceased members. The assistance of all is earnestly sought in reporting the deaths of Association members, with appropriate details. You may report the death of a member by sending an email to chapter.eternal@tbp.org.

- AL A '42 **Gentle Jr., Edgar Cuthbert**; July 20, 2013.
 AL B '43 **Rosenberg, Joseph H.**; November 3, 1997.
 '61 **Cain Jr., James O.**; October 6, 2013.
 AZ A '50 **Brueggeman, Leo J.**; January 18, 2013.
 '68 **Dixon, James G.**; March 22, 2013.
 AZ B '65 **Randolph, Ward Stanley**; June 26, 2004.
 '76 **Ferri, Mark S.**; September 18, 2013.
 AR A '51 **Roberts Jr., Roy W.**; September 8, 2013.
 CA A '49 **Elmore, Lester C.**; October 13, 2013.
 '49 **Marron, Hal Emmett**; May 24, 2010.
 '50 **Goldman, Ernest Julius**; May 28, 2004.
 '51 **Ruechel, Benjamin Alfred**; May 17, 2012.
 '59 **Williams, James Ward**; February 3, 2012.
 CA B '44 **Andrews, Tway W.**; January 19, 2013.
 CA Γ '57 **Dolby, Ray M.**; September 12, 2013.
 CA Δ '49 **Clauser, William J.**; September 30, 2013.
 '61 **Arnold, William H.**; May 3, 2013.
 CA E '56 **Rosenthal, William F.**; no details.
 CA N '75 **Baker, Larry D.**; September 3, 2013.
 '84 **Jennings, Kenneth L.**; November 1, 2013.
 CO A '82 **Muhic, Tamara J.**; July 16, 2012.
 CO B '43 **Hanna, William Johnson**; May 31, 2013.
 '47 **Chassell, John R.**; September 7, 2013.
 CT A '48 **Gesell, John H.W.**; September 24, 2013.
 '48 **Juviler, Peter H.**; June 2013.
 '50 **Rayner, William Alan**; February 26, 2012.
 DE A '48 **Liarakos, Louis T.**; August 30, 2013.
 DC A '60 **Robinson Sr., Alvin Roy**; September 8, 2013.
 FL A '41 **Radcliffe, Harold**; 2013.
 '44 **Ochi, Michel K.**; April 13, 2013.
 '48 **Floyd III, Linton E.**; no details.
 '49 **Sain, Charles H.**; no details.
 '51 **O'Malley, John Richard**; December 2, 2012.
 '59 **Newby, Harold D.**; August 20, 2013.
 FL B '58 **Warburton, Ralph J.**; September 13, 2013.
 '63 **Jennings, William S.**; November 10, 2004.
 FL E '38 **Richards, Elfyn John**; September 7, 1995.
 GA A '52 **White, Charles Marlin**; January 7, 2013.
 '54 **Burchett, Chalbert W.**; no details.
 '58 **Sidwell, Richard A.**; May 21, 2013.
 '66 **Pelton, William C.**; November 22, 2003.
 IL A '41 **Czyzewski, Harry**; March 8, 2009.
 '47 **Koenig, Herman E.**; July 31, 2010.
 '50 **Gluck, Robert E.**; no details.
 '58 **Nowak, William D.**; October 25, 2012.
 '59 **Schmitz, Roger A.**; October 11, 2013.
 IL B '35 **Budenholzer, Roland A.**; no details.
 '42 **Kezios, Stothe Peter**; August 15, 2005.
 '45 **Schmidt, Jack F.**; February 23, 2013.
 '50 **Goldhaber, Jerome Calvin**; July 26, 2013.
 '70 **Kornsand, Norman J.**; April 1, 2013.
 IL Γ '45 **Todd, David B.**; no details.
 '49 **Hauslein, Robert H.**; October 10, 2013.
 IL Z '85 **Buchanan, Evelyn A.**; November 25, 2010.
 IN A '35 **Keefe, Lloyd T.**; March 17, 2012. [Cent. 90]
 '37 **Perkins, George**; no details.
 '49 **Chenoweth, Janes M.**; no details.
 '49 **Snyder, Robert F.**; January 2013.
 '50 **Marshall Jr., John T.**; October 14, 2013.
 '50 **Walsh, John P.**; September 24, 2013.
 '51 **Clark Jr., Julius Graves**; July 18, 2008.
 '51 **Todd, Zane Grey**; November 3, 2013.
 '52 **Mayer, James W.**; June 14, 2013.
 '56 **Orr, Billy E.**; November 2, 2013.
 '65 **Beatty, Charles Lee**; February 3, 2010.
 '65 **Yake, Terry Jennings**; October 24, 2013.
 '80 **Hess, Joseph P.**; no details.
 IN B '64 **Hoffman, Stephen J.**; no details.
 IN Γ '60 **Heying, Douglas W.**; no details.
 IN E '51 **Brown, John V.**; November 18, 2013.
 IA A '41 **Metzler, Paul Duane**; April 29, 2010.
 '42 **Mueller, Carlton Robert**; April 15, 2010.
 '43 **McKlveen Jr., John H.**; April 20, 2011.
 '43 **Von Tersch, Lawrence W.**; April 19, 2010.
 '45 **Teich, Wesley W.**; September 4, 2013.
 '47 **Hurd, Mary K.**; no details.
 '48 **Uhrig, Robert Eugene**; June 12, 2013.
 '49 **Trecker, Joseph Mathew**; December 29, 2003.
 '51 **Kienzle, Harold K.**; no details.
 '54 **Inger, George R.**; November 6, 2010.
 '64 **Katzer, James R.**; no details.
 '67 **Hawkins, Jack Harvey**; September 30, 2006.
 '72 **Parrott, George W.**; July 28, 2013.
 IA B '43 **Breuklander, Lawrence J.**; September 7, 2013.
 '43 **Morris, John W.**; August 20, 2013.
 KS A '42 **Saut, Jules F.**; April 4, 2013.
 '44 **Blase, Edwin W.**; no details.
 '45 **Mercier Jr., Gordon Keith**; August 7, 2013.
 '48 **Daily, Jack F.**; no details.
 '59 **Hinds, Stephen Richard**; August 27, 2013.
 KY A '45 **Baker, Merl**; August 14, 2013.
 '60 **Stivers, John P H**; November 8, 2013.
 KY B '54 **Truscott, John C.**; January 2, 2010.
 LA B '48 **Slovenko, Surey Roy**; January 18, 2013.
 LA Γ '50 **Gober Jr., Leon**; October 2, 2013.
 '56 **McBride, James Marvin**; August 23, 2013.
 '76 **Level, Dorothy Mae**; April 8, 2008.
 ME A '38 **Goodwin, Howard M.**; September 18, 2013.
 '44 **Colcord Jr., Josiah E.**; no details.
 MD A '47 **Heine, Murray Anthony**; August 6, 2013.
 MD B '44 **Zelenietz, Jacob**; March 3, 2012.
 '58 **Felsentreger, Theodore Louis**; June 14, 2013.
 '66 **Reidler, Robert Norman**; April 21, 2008.
 '66 **Schwartz, Arthur Jay**; February 24, 2006.
 MA A '42 **Ginns, Haskell**; February 19, 2009.
 MA B '35 **Lane, Stanley Martin**; April 26, 2007.
 '42 **Schwartz, George J.**; March 7, 2011.
 '43 **Vershbow, Arthur E.**; no details.
 '59 **Avery, Donald Hills**; July 1, 2011.
 MA Δ '46 **Levins, Dave B.**; October 2, 2013.
 '51 **Glassanos, Andrew**; no details.
 '57 **Clark, Robert Allan**; October 25, 2013.

CHAPTER ETERNAL

- MA E '44 **Minalga, George Peter**; July 18, 2013.
 '48 **Parker, Edward F.**; July 7, 2013.
 '50 **Rafferty, John W.**; May 7, 2011.
 '56 **Flynn, Francis P.**; March 7, 2013.
- MA Z '52 **Morel, Charles Edmund**; May 15, 1996.
 '58 **Higby, Ronald E.**; September 1, 2013.
 '58 **Thayer, Myron Meader**; October 28, 2002.
- MI A '31 **Edwards, William B.**; December 17, 1997.
 '38 **Nothstine, Leo V.**; October 29, 2013.
 '38 **Ryckman, Seymour James**; October 24, 2013.
 '43 **Hanel, Bill E.**; May 7, 2013.
 '57 **Skifstad, James Gary**; September 2, 2013.
- MI B '41 **Galetto, Wilbert J.**; no details.
 '42 **Olson, Ingwald**; June 15, 2007.
 '42 **Stuckey, Robert M.**; February 5, 2011.
 '43 **Anderson, Walter T.**; no details.
 '49 **Haynes, Russell L.**; August 5, 1993.
 '51 **Huhtala, Walter John**; July 10, 2011.
 '51 **Pearce, William Richard**; November 4, 1992.
- MI Γ '35 **Goggin, William C.**; December 14, 1988.
 '44 **Burgess Jr., Warren Childs**; June 27, 1989.
 '45 **Curry, Warren Henry**; January 22, 2008.
 '45 **Pierson, Wilmer Glenn**; May 21, 2013.
 '50 **Ellis, Gene E.**; October 5, 2013.
 '71 **Luchini, John R.**; September 27, 2013.
- MI Δ '43 **Lance, Jack Ziehr**; July 31, 2013.
 '53 **Lienhard, Jerome Travers**; no details.
 '55 **Turnbull, Raymond S.**; November 11, 2011.
- MI E '61 **Grigsby, Carroll M.**; September 7, 2013.
 '68 **Tiede, Thomas O.**; August 16, 2012.
- MI Z '49 **Veazey, Daniel Richard**; October 4, 2013.
 '58 **Christiansen, William P.**; August 27, 2013.
- MI H '40 **Ball, Harry Robertson**; December 11, 2012.
- MN A '44 **Edeskuty, Fredrick J.**; May 10, 2013.
 '47 **Coles, Donald E.**; no details.
 '59 **Smith, Donald A.**; August 31, 2013.
- MS A '54 **Corey, Marion Willson**; September 28, 2013.
- MO B '58 **Ebert Jr., William Joseph**; December 4, 2008.
- MO Γ '40 **Lewis, Franklin Lyman**; December 1, 2005.
 '45 **Wente, Van A.**; no details.
 '56 **Scherz, Carl Joseph**; August 1, 2013.
- MT A '47 **Cowan, Leslie W.**; July 25, 2013.
- NJ A '43 **Hersam, Harold J.**; September 20, 2010.
- NJ B '42 **Wurtz, Robert**; January 2013.
 '51 **Stranahan, Henry**; August 7, 2013.
- NJ Γ '45 **Susser, Leonard L.**; no details.
 '51 **Perkins, George E.**; April 12, 2012.
 '52 **Rose, William**; no details.
 '69 **Spadaro, William T.**; August 1, 2013.
 '71 **Samulka, John**; no details.
- NJ Δ '57 **Richards Jr., Rowland**; January 8, 2013.
- NM A '42 **Thode, Edward Frederick**; March 25, 2013.
- NM B '80 **Blondefield, Margery B.**; February 27, 2008.
- NY A '43 **Balter, Stanley A.**; April 27, 2012.
 '43 **Henning, Rudolph Ernst**; July 9, 2013.
 '59 **Mir, Leon**; no details.
- NY B '39 **Stettner, Eric J.**; December 13, 2010.
 '43 **Platt, Charles E.**; December 9, 2012.
 '44 **Kenline, Frederick J.**; August 18, 2004.
 '49 **Andrews, James Leo**; August 17, 2012.
- NY Γ '22 **Wilcox, John E.**; January 26, 2000. [Cent. 35]
 '42 **Gardner Jr., Marvin B.**; August 16, 2013.
 '50 **Wild, Donald Sherwood**; July 28, 2013.
 '51 **Trueblood, Donald R.**; January 2012.
 '57 **Squires, Robert G.**; November 6, 2011.
- '72 **Swiatocha, John Michael**; no details.
- NY Δ '44 **Rochlin, Robert Sumner**; August 25, 2013.
 '46 **Ratcliff, Harold B.**; no details.
 '58 **Olt, Theodore F.**; June 9, 2013.
- NY Z '41 **Eisengrein, Robert H.**; January 20, 2013.
 '45 **Schwartz, Norman**; February 15, 2009.
 '52 **Conklin, David Arnold**; July 25, 2013.
- NY H '58 **Ruf, Frank C.**; no details.
- NY Θ '48 **Ladue, Joseph Francis**; September 24, 2013.
 '53 **Rosati, Robert E.**; October 2012.
- NY I '41 **Bindman, Stanley K.**; October 5, 1998.
 '68 **Loos, George J.**; 2010.
- NY K '44 **Eisenberg, Richard F.**; August 4, 2013.
 '47 **Shriver, William Francis**; August 20, 2013.
- NY N '76 **Haas, Oscar W.P.**; September 17, 2012.
- NC A '44 **Strum, Peter Doub**; February 9, 2005.
 '49 **Lloyd Jr., Robert Thomas**; July 28, 2013.
 '49 **Peterson, Wayne Ashley**; June 28, 2012.
 '51 **Ingram, William M.**; no details.
- NC Γ '41 **Kelcec, George**; September 11, 2013.
 '49 **Stottlemeyer, Paul C.**; no details.
- ND A '77 **Cofell, Neil B.**; 2011.
- OH A '48 **Westenbarger, Glen R.**; April 30, 2013.
 '62 **Witenhafer, Donald E.**; no details.
 '81 **Crawford, Gregory A.**; no details.
- OH B '39 **Montgomery, Donald J.**; no details.
 '49 **Freeman, Donald S.**; December 14, 2008.
 '51 **Wadsworth Jr., Roland**; no details.
- OH Γ '54 **Hilberg, Donald Everett**; February 20, 2013.
 '65 **Veazie, Richard Munro**; November 9, 2005.
- OH Δ '51 **Lytle, James Richard**; November 8, 2011.
- OH E '48 **Kerka, William F.**; no details.
 '49 **Jayjack, Edward Joseph**; August 11, 2013.
- OH Z '72 **Goodwin, George Franklin**; August 29, 2013.
- OH Θ '82 **Woodard Jr., Mack C.**; February 5, 2012.
- OK A '36 **Marriott, Bett Kniseley**; August 28, 2012.
 '40 **Nibley, Preston Parkinson**; March 12, 2013.
 '40 **Woodson, Jack T.**; no details.
 '61 **Morris Jr., George A.**; March 10, 2013.
 '87 **Hernandez, Herendino G.**; 2009.
- OR A '39 **Kidby, Harold Alfred**; April 7, 2005.
 '78 **Haake, Carla J.**; May 2013.
- PA A '44 **Seigle, Harold J.**; October 31, 2007.
 '59 **Ringer, Richard Malcolm**; October 13, 2013.
 '61 **Horger, Theodore U.**; October 28, 2013.
- PA B '50 **Hesser, Calvin Burton**; April 30, 2003.
 '58 **Allen, John Loyd**; August 5, 2013.
- PA Γ '37 **Strohecker, Henry R.**; April 5, 2013.
 '43 **Wolff Jr., John Lloyd**; November 10, 2013.
 '45 **Pake, George E.**; March 4, 2004.
 '51 **Friedlaender, Fritz J.**; October 3, 2012.
 '56 **Fetzer Jr., John Albert**; June 2, 2012.
- PA Δ '41 **Goldin, Robert W.**; no details.
 '42 **Schulz, Richard Burkart**; October 1, 1998.
- PA Z '47 **Blumel Jr., Herman F.**; March 23, 2012.
- PA H '49 **Martin, Roger Eugene**; August 10, 2013.
 '50 **Pfluger, Richard A.**; January 9, 2013.
- PA Θ '62 **Schrier, Robert John**; April 13, 2013.
- PA K '49 **Walkling, Richard W.**; May 22, 2013.
- PR A '60 **Negron, Jenaro R.**; December 2012.
 '72 **Calderon-Colon, Andres**; November 9, 2013.
- RI B '54 **Roberts, Francis H.**; September 25, 2012.
- SC B '51 **Bashore Sr., Allen S.**; August 12, 2013.
 '74 **Booth, Elton T.**; no details.
- SC Γ '51 **Perks, Harry Mark**; no details.

- SD A '49 **Schleusener, Richard A.**; Sept. 11, 2013.
 TN A '42 **Sprouse, McBeth N.**; August 16, 2013.
 '47 **Farnham, Robert M.**; July 21, 2013.
 '50 **Vance Jr., Claude S.**; September 25, 2013.
 '61 **Fisher, Thomas C.**; September 2, 2013.
 '62 **Hooker, James W.**; no details.
 '65 **Kennerly, John Mauk**; October 14, 2013.
 '71 **Madison, James Morris**; August 9, 2013.
 '86 **Dylewski, Steven Henry**; August 21, 2013.
 TX A '43 **Pipkin, William Kirk**; September 12, 2013.
 '47 **Bellows, Frank Williams**; September 3, 2013.
 '50 **Buchan, Michael Albert**; no details.
 '54 **Rogers Jr., Carl Ester**; May 25, 2013.
 TX B '48 **Roberts Jr., Evan E.**; July 2009.
 '53 **Relyea, James Ross**; February 23, 2013.
 '65 **Green, Douglas Mack**; September 29, 2013.
 '71 **Groce, James Freelan**; September 3, 2013.
 TX Γ '42 **Friedl, Eugene Mack**; May 3, 2013.
 '44 **Kieschnick Jr., William Frederick**; 2013.
 '44 **Kobayashi, Riki**; 2013.
 '44 **Morgan Jr., Chester S.**; August 17, 2013.
 '61 **Rogers, Wayne F.**; June 2, 2013.
 TX Δ '39 **Rollins Jr., Andrew P.**; August 23, 2012.
 '42 **Poland Sr., Robert L.**; November 2, 2013.
 '45 **Geddes, Leslie Alexander**; October 25, 2009.
 '53 **Harrison, Charles Melvin**; November 8, 2009.
 '54 **Gamble, Howard W.**; September 25, 2013.
 '55 **Pendleton, Leland D.**; September 4, 2013.
 '56 **Ford, Charles Allen**; August 10, 2013.
 '57 **Meyer, Kirby T.**; no details.
 '60 **Fite, Lloyd E.**; September 2, 2012.
 TX H '66 **Darst, Harold J.**; September 27, 2013.
 UT A '47 **Pack, Douglas H.**; no details.
 '50 **Baer, Alva Daniel**; September 26, 2012.
 '51 **Howarth, Raymond Shaw**; April 9, 2013.
 UT B '75 **Mildenhall, Glen Thomas**; October 16, 2013.
 VT B '60 **Brackney, Richard C.**; September 12, 2013.
 VA A '70 **Maddox Jr., Charles E.**; no details.
 VA B '51 **White, James R.**; February 11, 2013.
 '58 **Hancock, Earl Clark**; July 10, 2013.
 VA Γ '85 **Shannon, Brian Francis**; October 13, 2013.
 VA Δ '40 **Flowers, Daniel Fort**; July 29, 2013.
 WA A '47 **Itnner, Bruce**; September 6, 2011.
 '48 **Orlob, Gerald T.**; March 23, 2013.
 '59 **Eide, Melvin O.**; April 13, 2013.
 '69 **Cross, Richard Lee**; November 19, 2006.
 WAB '41 **La-Londe, William E.**; no details.
 '48 **Smith, Herman W.**; March 11, 2011.
 '55 **Thomas, David W.**; December 13, 2012.
 '85 **Oh, Chang Ho**; August 7, 2013.
 WV A '49 **Medick Sr., William J.**; July 25, 2013.
 '77 **Del Grande, Richard E.**; August 26, 2013.
 WI A '38 **Wang, Chu-Kia**; April 13, 2013.
 '40 **Beyer, Jackson Herbert**; March 10, 2013.
 '41 **Davidson, Charles H.**; November 7, 2008.
 '43 **Duddleston, James Mac**; April 6, 2008.
 '43 **Saemann Jr., Jesse C.**; October 3, 2010.
 '61 **Voss, Larry L.**; no details.
 '64 **Magee, Carl James**; May 3, 2012.
 '71 **Halldin, George Wayne**; April 4, 2008.
 WI B '36 **Doda, Casimir J.**; no details.
 '42 **Storto, Joseph J.**; August 24, 2013.
 '44 **Pell, Erik M.**; August 14, 2013.
 '49 **Merkel, Kenneth J.**; no details.
 WY A '74 **Radman, Tony J.**; no details.

Photos: Ray Thompson

In Memory

Douglas M. Green, Ph.D., P.E., Texas Beta '65, passed away Sunday, September 29, 2013, in McKinney, TX, following a long illness at the age of 71.

Doug was born May 2, 1942, in Big Spring, Texas. He earned his bachelor's and master's degrees in electrical engineering from Texas Tech University, and his Ph.D. from the University of Texas at Austin. He was inducted into Tau Beta Pi as a student in 1964.



Doug held several volunteer positions with the Association, including TBII President, 1998-2002; Chief Advisor to the New York Tau and Maryland Alpha Chapters; and founding member of the Southern Tier Alumni Chapter.

He served as an associate professor at Texas A&M University, 1978-85; as a department head at oilfield services company Dowell Schlumberger, 1985-88; as associate dean for research and external affairs for State University of New York at Binghamton, 1988-93; as dean of the Marquette University college of engineering, 1999-2003; and most recently as dean of academic program planning and development at Texas A&M-TEXARKANA.

He is survived by his ex-wife and lifelong friend, Jan, along with children Dustin and Alexis.

John R. Luchini, Ph.D., P.E., Michigan Gamma '71, passed away Friday, September 27, 2013, at his home in Findlay, OH, after a short illness. He was 64.

John was born in Detroit, MI, and earned his bachelor's, master's, and Ph.D. from the University of Michigan. His 44 years of dedicated service to the Association began when he was inducted as a student in 1969.



He served in many positions, including President at Michigan Gamma, District 7 Director for three years; Director of District Programs for four years; and an Executive Councilor, 1994-98.

He helped in the development of the Engineering Futures program and was a facilitator for more than 22 years.

John attended at least 32 TBII annual Conventions, serving as Convention Parliamentarian nine times, and as the Convention Chair in 2009.

He was hired by Cooper Tire and Rubber Company in 1977 as a tire engineer. A physicist by training, John retired in 2011 as senior research scientist and engineer after 34 years with the company.

John is survived by his wife of 42 years, Tamara (Wyckoff) Luchini; children and grandchildren, Kathleen and Dirk Luchini Colbry (Mara, Grace, Jack, and Kenner), Mark and Dolly Luchini (Andrew, Alexander, Rory, and Amy), Nan Luchini, Tim Luchini and Kayla Boespflug, Frank Luchini; and sister, Violet (Luchini) Elledge.

Tau Bates so far are Kathleen, MI A '99, Mark, MI A '01, Dirk, MI A '06, and Tim, SD A '11.



IN THE COLLEGES

SPOTLIGHT

New Trade With China?

With research funding and teaching opportunities drying up at home, more young Western academics are being drawn to elite Chinese universities, reports *Time* magazine.

They are taking up positions at schools like those of Peking, Tsinghua and Fudan that not only pay well but also come with perks like housing allowances and tax exemptions, adds *Time*.

"I'm able to save a lot more money than I could if I were in the U.S. right now," says Kevin Chastagner, who started at Peking University's business school two years ago as an assistant professor.

Job descriptions too are a far cry from those experienced by lesser-paid, overworked colleagues in North America and Europe. Chastagner says he and other compatriots who have opted for China find the teaching load "favorable," allowing them to spend more time on research, which is not always possible for junior academics.

And they aren't required to handle administrative chores either. "There are some definite positives I wouldn't have been able to get in a school in the U.S.," Chastagner says. •A report released by the Council of Graduate Schools says a modest rise in enrollments for graduate programs was, for the most part, driven by a rise in international students.

The report said that from "the fall of 2011 to the fall of 2012, first-time enrollment in graduate certificate, education-specialist, master's, and doctoral programs increased by 1.8 percent, to more than 461,000 students."

Debra Stewart, president of the council, said, "We are seeing a widening gap between U.S. and international first-time enrollments in engineering, math, and computer science."

Leading Salary Survey

Engineers took the lead in a survey relating college major to future earnings conducted by a team at Georgetown University.

They interviewed hundreds of full-time employees holding various bachelor's degrees and calculated each area of study's median reported earnings.

The highest-paid area of study—petroleum engineering—makes \$91,000 (134%) more than the lowest-paid area, counseling psychology.

The researchers wrote that income isn't the only factor, but hoped their findings would help students make informed decisions.

Top 10 highest-paid majors

1. Petroleum Engineering: \$120,000
2. Pharmacy, Pharmaceutical Sciences and Administration: \$105,000
3. Mathematics and Computer Science: \$98,000
4. Aerospace Engineering: \$87,000
5. Chemical Engineering: \$86,000
6. Electrical Engineering: \$85,000
7. Naval Architecture and Marine Engineering: \$82,000
8. Mechanical Engineering: \$80,000
9. Metallurgical Engineering: \$80,000
10. Mining and Mineral Engineering: \$80,000

Jobs Concentrated

U.S. engineering and science employment is highly concentrated in a few states, according to a recently released National Science Foundation report.

More than a quarter of all scientists and engineers are concentrated in California, Texas, and New York, according to the report. Florida, Virginia, Illinois, Massachusetts, and Ohio also employ a large portion of them.

Out of the total 5.7 million scientists and engineers, 3.1 million reported being in a computer or mathematical sciences occupation, and 1.7 million reported being engineers.

The report also calculated the

proportion of workers employed in engineering and science jobs in each state and showed that it's highest in Washington, DC, with Maryland and Massachusetts coming in behind.

The NSF used U.S. Census Bureau data for the report.

PEOPLE

Emily L. Allen, Ph.D., *New York Alpha '84*, is the new dean of the college of engineering,



computer science, and technology at California State University, Los Angeles. She had been associate engineering dean since 2008 at San

José State University, which she joined in 1992 as an assistant professor. Allen has been director of the Northern California affiliate of Project Lead the Way, a provider of STEM programs for schools.

Adedeji B. Badiru, Ph.D., P.E., *Tennessee Gamma '79*, has become dean



of the graduate school of engineering and management at the Air Force Institute of Technology (AFIT) at Wright Patterson Air Force Base, OH. He was

previously professor, and head of systems engineering and management there. Badiru was professor and department head of industrial and information engineering at the University of Tennessee in Knoxville from 2000 to 2006.

Bruce W. Berdanier, Ph.D., P.E., *South Dakota Alpha '80*, has been appointed dean of the school of engineering at Fairfield University, CT. He was professor and department head of civil and environmental engineering at South Dakota State Uni-



versity. The focus of his research and consulting is chemical compounds in surface water and in wastewater treatment. He was city engineer in Shelby, OH, from

1992 to 1996.

Royce O. Bowden Jr., Ph.D., *Mississippi Alpha '84*, has been named



dean of Wichita State University's college of engineering, effective January 16. He has been associate dean for academic affairs at the college of engineer-

ing at Mississippi State University since 2011. Bowden's predecessor at Wichita was **Zulma R. Toro-Ramos, Ph.D.,** *Kansas Beta, '82*, who became provost and a vice chancellor at University of Arkansas.

Gregory L. Fenves, Ph.D., *New York Delta '79*, is now provost of Univer-



sity of Texas at Austin, where he was engineering dean. Fenves went to Austin in 2008 from the University of California-Berkeley where he was chair of the department of civil and environmental engineering and assistant director at the Pacific Earthquake Engineering Research Center.

Vistasp M. Karbhari, Ph.D., *California Psi '84*, has taken over as the



eighth president of The University of Texas at Arlington. He is the former provost and executive vice president for academic affairs at the University of Alabama in Hunts-

ville. Karbhari is a renowned engineer and researcher in composite materials, and structural engineer.

FACILITIES

University of Pennsylvania has inaugurated the 78,000 square-foot Krishna P. Singh Center for Nanotechnology to be the college's focal point for work which involves the manipulation of matter on an atomic and molecular scale.

The characterization facility is situated on bedrock, 18 feet below the surface, to help minimize vibrations that would interfere with its atomic and electron microscopes. The labs are designed to be isolated from temperature fluctuations, atmospheric turbulence, and electromagnetic noise.

Beyond serving faculty in engineering, physics, and chemistry, the center was built to spark interdisciplinary inquiry.

The Singh Center was made possible by a \$20 million gift by Penn alumnus Krishna P. Singh, founder of energy-technology company Holtec International.

North Carolina State University has announced a \$60 million federal contract to partner with the National Security Agency on a new center to research the collection, sorting and storing of massive amounts of computer data.

The new Laboratory for Analytic Sciences will be located on N.C. State's Centennial Campus.

Many details of the university's collaboration with the agency are being kept secret. But the university says the lab will create at least 100 new jobs and is intended to bring together some of the best minds from government, academia and industry.

•**University of Utah** is in talks with the National Security Agency on a proposed curriculum to prepare students for jobs in the massive data center the agency is building at Camp Williams, UT.

Northwestern University engineering school students are learning to swing dance in a for-credit class called Whole Body Thinking. Joe Holtgreive, an assistant dean, started the class to help future engineers break outside their comfort zone. The course is teaching students known for left-brain thinking to use more of the right side of their brains. The students include biomedical, mechanical and chemical engineering majors who say they're learning more than dance. The class is teaching them to think on their feet and work collaboratively with partners—skills they say will help make them better engineers.

The center will be a network of computer hardware covering 100,000 square feet of space with machines consuming enough electricity to power a small city. The NSA says it will be part of its Comprehensive National Cybersecurity Initiative.

The NSA has been vague on the kind of work that will be done by employees at the center itself, but indications are the workforce will primarily be engineers who take care of the cadre of computers as opposed to analysts or programmers.

University of Michigan and the Ford Motor Co. are opening a new battery research and manufactur-

ing lab to speed the development of batteries for electric and hybrid cars.

The center, on the university's campus in Ann Arbor, will bring together battery makers, car companies and researchers who will test new batteries for prototype vehicles.

Automakers all have labs where they test batteries for durability and quality. This happens late in the development process. The new lab is planned to ensure their input is heard earlier.

The \$8 million facility has received a \$5 million grant from the public-private Michigan Economic Development Corp. and \$900,000 from the university. Ford contributed \$2.1 million. Other automakers have reportedly already asked about doing research there.

Electric cars have been slow sellers, making up less than 1% of U.S. sales last year. Gas-electric hybrids and plug-in hybrids—which can go further on electricity—sell in larger numbers, but still make up just 3% of sales. The batteries in those cars can add thousands of dollars to price tags. Battery costs are expected to fall, as new materials are discovered and production increases.



Brain Ticklers

RESULTS FROM SUMMER

Perfect

Antmann, Eric D.	FL	B	'14
Buckley, Robert C.	TN	Z	'12
*Gibbs, Kenneth P.	MO	Γ	'76
*Harter, Eamonn T.	ID	Γ	'06
*Harvey, Arthur J.	OH	A	'83
McGraw, Sean		Husband of member	
Norris, Thomas G.	OK	A	'56
Quan, Richard	CA	X	'01
Richards, John R.	NJ	B	'76
Schmidt, V. Hugo	WA	B	'51
Spong, Robert N.	UT	A	'58
*Stribling, Jeffrey R.	CA	A	'92
*Strong, Michael D.	PA	A	'84
*Van Wyk, Rogell	IN	A	'59
*Wending, D. Greg	IL	A	'79

Other

Allen, Jonathan M.	MI	Γ	'92
Aron, Gert	IA	B	'58
*Bohdan, Timothy E.	IN	Γ	'85
Cirilli, John S.	MN	B	'05
Eckley, Paul L.	NV	A	'75
Edge, Billy L.	GA	A	'71
Handley, Vernon K.	GA	A	'86
Hasek, William R.	PA	Γ	'49
Jones, Donlan F.	CA	Z	'52
Joy, Robert L.	CA	N	'66
*Kimmel, Peter G.		Husband of member	
McCormick, Raynard		Non-member	
Rentz, Peter E.	IN	A	'55
Ricketts-Greene, Janique	DC	A	'01
Rubin, James D.	MI	Γ	'82
Shah, Parth		Son of member	
Shamblin, G. Richard	FL	A	'72
Stadlin, Walter O.	NJ	Γ	'52
Summerfield, Steven L.	MO	Γ	'85
Surrey, Robert I.	NY	Δ	'72
Sutor, David C.		Son of member	
*Thaller, David B.	MA	B	'93
Vinoski, Stephen B.	TN	Δ	'85
Voellinger, Edward J.		Non-member	

*Denotes correct bonus solution

SUMMER REVIEW

Problems 3 (game scores) and 5 (cryptic addition) were the ones keeping people from getting perfect scores. Several people only got half credit to the Bonus (cyclic towers), since they did not answer both parts correctly.

FALL SOLUTIONS

Readers' entries for the Fall problems will be acknowledged in the Spring '14 *Bent*. Meanwhile, here are the answers:

1 The Red Lion is **13 miles** from the Purple Cow. In the first interval, with Bob walking and Carl cycling, we have $4/W_B = (D-4)/C_C$, or W_B/C_C

$= 4/(D-4)$, where D is the distance between the towns, and C and W are cycling and walking speeds. The third interval is a similar situation to the first, with Bob walking and Carl cycling, so $(D-7+2)/W_B = (D+7-2)/C_C$, or $W_B/C_C = (D-5)/(D+5)$. Setting these expressions equal gives $4/(D-4) = (D-5)/(D+5)$, which can be solved for D to give $D = 13$. The other information provided is just a red herring.

2 Ann has **13 Canadian stamps** and **4 French stamps**. France and Canada are most often mentioned, so express all the others in terms of F or C . This gives $J = 2C$; $D = 10F$; $E = 5C - 10$; $H = 5F$; $L = C - 2$; $I = 3C$; $A = (3C - 1)/2$; $K = 3C - 1$; $B = 4F$; and $G = 2C - 4$; which, along with F and C , sums to $20F + 18.5C - 17.5 = 303$ or $40F + 37C = 641$. So C must be odd and must be 1, 3, 5, 7, 9, 11, 13, or 15. Only $C = 13$ gives an integral value for F , namely $F = 4$.

3 The four smallest N values are **1910, 9110, 89,998, and 98,998**, which are unique solutions for $A + B = AC$; $A + B = BC$; $BA + A = AB$; and $A + BA = AB$. You can find these with the help of a computer or patiently try all possible four and five digit cryptic additions manually.

4 The probability that a randomly chosen positive integer N has no repeated prime factors is $P = 6/\pi^2 = 0.60793$. The probability that N has the prime factor p is $1/p$ (every p th integer is divisible by p), and the probability that it has the factor p^2 is $1/p^2$. Thus, the probability that N is not divisible by p^2 is $1 - 1/p^2$, and the probability P that it has no repeated prime factors is $P = (1 - 1/p_1^2)(1 - 1/p_2^2)(1 - 1/p_3^2) \dots$. Inverting both sides gives: $1/P = [1/(1 - 1/p_1^2)][1/(1 - 1/p_2^2)] [1/(1 - 1/p_3^2)] \dots$. But, $1/(1 - 1/p_1^2) = 1 + 1/p_1^2 + 1/p_1^4 + 1/p_1^6 + \dots$, so $1/P = (1 + 1/p_1^2 + 1/p_1^4 + 1/p_1^6 + \dots)(1 + 1/p_2^2 + 1/p_2^4 + 1/p_2^6 + \dots) \dots = (1 + 1/2^2 + 1/2^4 + 1/2^6 + \dots)(1 + 1/3^2 + 1/3^4 + 1/3^6 + \dots)(1 + 1/5^2 + 1/5^4 + 1/5^6 + \dots) \dots$. Multiplying this

out gives $1/P = 1 + 1/2^2 + 1/3^2 + 1/4^2 + 1/5^2 + 1/6^2 + \dots$ which is just the sum of the reciprocals of the squares of the positive integers that Euler showed was equal to $\pi^2/6$. Therefore, $P = 6/\pi^2 = 0.60793$.

5 $V_N = 2.5S(1.05^{N-1} - 1.01^{N-1})$ and $I_N = S[1.25(1.05)^{N-1} - 0.25(1.01)^{N-1}]$. Let V_N , S_N , and I_N be the investment at the beginning of year N , the salary for year N , and the income for year N , respectively, with $V_1 = 0$ and $S_1 = S$. Salary increases 5% a year, so $S_N = S(1.05)^{N-1}$. Income is salary plus 10% of investment, so $I_N = S_N + 0.1V_N$. The total investment for a subsequent year increases from the previous year by 10% of the previous year's income: $V_N = V_{N-1} + 0.1(S_{N-1} + 0.1V_{N-1})$. Then, $V_N = 1.01V_{N-1} + 0.1S(1.05^{N-2}) = 0.1S \sum_{i=0}^{N-2} 1.01^i (1.05^{N-2-i}) = 0.1S(1.05^{N-2}) \sum_{i=0}^{N-2} (1.01/1.05)^i = 0.1S(1.05^{N-2}) [(1 - (1.01/1.05)^{N-1}) / (1 - 1.01/1.05)] = 0.1S(1/1.05) (1.05^{N-1} - 1.01^{N-1}) / (1 - 1.01/1.05) = 0.1S(1.05^{N-1} - 1.01^{N-1}) / (1.05 - 1.01) = 2.5S(1.05^{N-1} - 1.01^{N-1})$. Then, $I_N = 1.05^{N-1}S + 0.1S(2.5)(1.05^{N-1} - 1.01^{N-1}) = S[1.25(1.05^{N-1}) - 0.25(1.01^{N-1})]$

Bonus $a = 41,472(180^{12})$, $b = 1,728(180^8)$, $c = 288(180^6)$, and $d = 288(180^7) = 1,763,193,692,160,000,000$. Let $a = AF^{12}$, $b = BF^8$, $c = CF^6$ and $d = DF^7$. Substituting into the given equations, we have $A^2 + B^3 = C^4$ and $A^4 + B^6 = D^7$. Then, find a triple (A, B, C) that solves the first equation. For example, $A = 41,472 = 2^9 3^4$, $B = 1,728 = 2^6 3^3$ and $C = 288 = 2^5 3^2$ is one such triple. Substituting these values into the second equation gives $A^4 + B^6 = 41,472^4 + 1,728^6 = 2^{36} 3^{16} + 2^{36} 3^{18} = 2^{36} 3^{16}(1 + 3^2) = 2^{36} 3^{16} 10 = (2^9 3^2)^7 2^3 5$, where we have solved for the largest D by factoring out powers of 7; this makes $F = 2^9 3^2 5 = 180$. So, $D = 2^9 3^2 = 288$. The values of a , b , c and d follow. The above selected values for A , B , and C result in the smallest d that we have found.

Computer Bonus You would expect to toss the die about

44.25 times to complete drawing the beetle, or, to be exact, $44 + 1,006,625/3,981,312$ tosses. The problem can be modeled as a large finite state machine. A "state" is a particular (allowed) assemblage of the beetle's body parts. Order of addition is not relevant, so tossing body-head-leg results in the same state as tossing body-leg-head. To win a game, you start with nothing and end with a complete beetle. On each toss of the die, either the state stays the same or one body part is added, transitioning the beetle into a new state. (After 13 tosses, the beetle assumes one of 141 possible states, ranging from zero parts to a complete beetle consisting of a body, head, tail, 6 legs, 2 eyes, and 2 antennae.) The problem asks for the expected value (EV) of the number of tosses required to reach the state of a complete beetle. For a given state, the EV equals the average EV's of the states that transition to it plus the expected number of tosses to transition out of it. (The expected number of tosses to transition out of a state equals $6/\text{number of unique ways to leave that state}$.) One approach is to work backwards from a complete beetle to nothing to determine the states. Doing this results in 141 simple equations. The judges wrote a program that calculates the probability of each of the 141 states after N tosses and found that the EV of a completed beetle converged to a repeating decimal equal to the ratio $176,184,353/3,981,312$. Alternatively, one can write a Monte Carlo program and get a close approximation to the above answer.

NEW WINTER PROBLEMS

1 I have found six different six-digit positive integers, whose sum also has six digits, with all 42 digits having one of only two different values. If I told you the sum, you would be able to identify all six numbers (no leading zeros). What is this sum?

—An Enigma by Jan Kay
in *New Scientist*

2 You are to paint a totem pole, consisting of twelve animal images stacked on top of each other, using only two colors, blue and yellow. No two adjacent animals can be painted blue, although consecutive yellow colors are allowed. In how many different ways can you paint the totem pole?

—*BrainMatics Logic Puzzles*
by Ivan Moscovich

3 Solve the following two cryptic addition problems simultaneously, that is, letters have the same values in both cryptics. Each different letter stands for a different digit. The same letter always stands for the same digit. There are no leading zeros. An * can stand for any digit.

*****	*SEVEN**
*****	*SEVEN**
FOUR**	FOURTEEN
<u>SEVEN*</u>	
ELEVEN	

What is the value of FOURTEEN?
—An Enigma by Albert Haddad
in *New Scientist*

4 "CRYPTOQUIP" is a puzzle in a lot of newspapers. It consists of a coded sentence or two with each letter of the message represented by a different unique letter of the alphabet. If all 26 letters are used, how many codes are possible? Either a closed form equation or an approximate numerical value is a permissible answer.

—Don A. Dechman, *TX A '57*

5 Consider a five-by-five array of 25 points, one cm apart horizontally and vertically. Select five different points, none of which lie on either main diagonal of the array, such that the distances between pairs of points are all different. There are multiple solutions, but you only need to furnish one. Consider the array as consisting of five rows by five columns, each numbered 1 to 5, and express your answer as five pairs of numbers giving the row and column of the selected points.

—*Puzzles 101: A PuzzleMaster's Challenge* by Nobuyuki Yoshigahara

Bonus Given a three-by-three grid of pigeonholes, fastened to a wall with the middle hole covered, place

1	9	0
7		8
2	6	2

envelopes in any or all of the outside holes so that the sum of the number of envelopes on each of the four

sides has the same value, N . For example, if N is 10, one solution is shown in the accompanying figure. How many ways, including reversals, rotations, and reflections as different arrangements, can this be done? Express your answer as a function of N .

—*The Canterbury Puzzles*
by H.E. Dudeney

Computer Bonus. Find two different ten-digit numbers, each using the digits 0 through 9 exactly once, such that their square roots are the reverses of each other.

—*You'd Better Be Really Smart Brain Bafflers* by Tim Sole and Rod Marshall

Send your answers to any or all of the Winter Brain Ticklers to **Curt Gomulinski, 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 Winter column is the appearance of the Spring *Bent* in early April. 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. Curt will forward your entries to the judges who are **H.G. McIlvried III, PA Γ '53; F.J. Tydeman, CA Δ '73; J.C. Rasbold, OH A '83**; and the columnist for this issue:

D.A. Dechman, TX A '57.

ENGINEERING JOB BOARD

Browse over 1,700 engineering jobs, faculty positions, and internships.

New opportunities are posted on our home page daily and a full list of openings are available by visiting www.tbp.org/memb/jobBoard.cfm.





ASSOCIATION BRIEFS

MCDONALD MENTOR NOMINATIONS

Marion and Capers W. (*North Carolina Gamma '74*) McDonald and the Association established an award for excellence in mentoring and advising among Tau Beta Pi members.

Recipients of the Tau Beta Pi-McDonald Mentor Award are chosen by a committee and presented with an engraved medallion, and a \$2,000 cash award (\$1,000 to the honoree and \$1,000 to the nominating chapter or to the honoree's chapter if nominated by a member).

Any chapter or member may nominate one (or more) alumnus member(s). Email the following brief material in digital format to Headquarters by April 1.

1) A one-page summary of achievements and/or contributions of the nominee exemplifying the objective of the award.

2) Two letters of reference from persons other than the nominating party or sponsoring chapter president who are familiar with the nominee's contributions and achievements, such as a dean or supervising personnel.

DISTINGUISHED ALUMNUS AWARD

TBPI seeks nominations for the Distinguished Alumnus Award! We wish to recognize members who have demonstrated integrity, breadth of interest both inside and outside engineering, adaptability, and unselfish activity cited in our Eligibility Code and who have fostered a spirit of liberal culture on local, national, and international scales.

Their personal qualities of excellence and leadership serve as examples so as to influence the professional careers and lives of our collegiate members.

Up to five winners may be selected each year by a committee of Association Officials appointed by the Executive Council. Awardees are introduced at the Convention. A Scholarship is named in honor of each of them.

Any individual member or any chapter may nominate any alumnus member, except an Association Official. There is no limit on the number of alumni proposed. Required documentation for a nomination includes the name, contact information, chapter, and a brief summary of the career achievements of the nominee. Nominations may be submitted by mail or email to tbp@tbp.org by February 1.

After review and screening, the Selection Committee will contact each nominee with a record of contributions in harmony with the objectives of the award, and winners will be notified by June 1.

2014 DISTRICT CONFERENCES

THE DISTRICT PROGRAM provides a vital link between the Association and individual chapters. Each year the Directors meet with students at regional conferences to provide both retiring and new officers opportunities to improve chapter operations and to socialize. **Interested alumni are encouraged to attend** but should email tbp@tbp.org for details. All chapters are urged to elect new officers before their District Conference.

DISTRICT	LOCATION	DATE
1	Boston, MA	Apr. 4-5
2	New York City, NY	Mar. 1-2
3	Philadelphia, PA	Feb. 21-22
4	Richmond, VA	Apr. 12
5 North	Greenville, SC	Jan. 25
5 South	Palm Beach Gardens, FL	Jan. 25
6	Chattanooga, TN	Apr. 4-5
7	Cincinnati, OH	Apr. 4-5
8	Terre Haute, IN	Apr. 11-12
9	Kansas City, MO	Mar. 1
10	New Orleans, LA	Mar. 22
11	Minneapolis, MN	Apr. 11-12
12	Provo, UT	Mar. 1
13	Socorro, NM	Mar. 1
14	Spokane, WA	Mar. 1-2
15	Davis, CA	Mar. 1
16	Santa Barbara, CA	Mar. 8

DISTRICT DIRECTORS NEEDED

We are looking for District Directors in the Cincinnati, OH; Houston, TX; Oklahoma City, OK; St. Louis, MO; and Washington, DC, areas.

District Directors are asked to visit their local chapters (typically 4-6 per director) once per year and attend and assist with the annual District Conference, the three-day annual Convention in the fall, and the Association Officials meeting in June. Directors serve as a resource for local chapters, collaborate with one to three other directors in the district, and assist in general administrative work.

Serving as a District Director is a challenging role in the Association, but it is also a fun and educational avenue for giving back to the Association. If you are interested and live in any of the areas, send an email to tbp@tbp.org. Interested alumni not living in these areas are also encouraged to send an email in case a position becomes available in the future.

ALUMNI CHAPTERS

Treasure Valley Alumni Chapter was installed at a ceremony in Boise, ID, on November 12. Shown with their Charter are from left, front row: Treasurer **Eamonn T. Harter**, ID Γ '06; President **Stacey K. Stanton**, MA H '10, and Director **Janet M. Callahan, Ph.D.**, CT B '83; back row: Vice President **A. Rey DeLeon**, ID Γ '10, Secretary **James L. Woidt**, NH A '10; and Director **Thaddeus B. Welch III, Ph.D., P.E.**, WY A '79. For more information:

—**Stacey Stanton**, treasurevalleytbp@gmail.com



Boston Alumni Chapter was reinvigorated in the past year and we've been active ever since. There's a thriving community of young and old alums alike, and a great connection to our local university chapters. We've done a large speed-networking event, had an alumni panel speak to students at MIT, we're organizing monthly lunches linking alums with local university chapters for small meetings, and have many more informal social events to come. Our goal is to keep the conversation going, creating a welcome inviting place for alums to reach out to one another and to the next generation.

—**Kate R. Goldstein**, RI A '08, krg@mit.edu

Capital District Alumni Chapter has laid its foundations in Albany, NY. Before this summer, I hadn't been involved with TBP since I was an undergrad. I went to a gathering out of curiosity, and to connect with a nationwide community. I had a blast. I decided I would get involved, and I highly recommend the experience. Searching LinkedIn and reaching out to Director of Alumni Affairs Tricia E. Gomulinski is a great start. With no chapter near me, I started one. We've held meetings at local restaurants, kept it informal, and had a good time trading stories. We held a networking night for students of two local colleges, where they could ask questions about careers and graduate school. If you're interested in planning something similar, student chapter officers are a great help. The faculty advisor may get involved too and is sometimes easier to find. We held ours a few days be-

fore one college's career fair. Another event we've scheduled is volunteering with a food bank. They're looking for help year round, have a variety of ways to help, and can be really fun! If you'd like to know more:

—**Thomas V. Finn**, NY Θ '12,
Thomas.V.Finn@gmail.com, or on LinkedIn

Huntsville Alumni Chapter was created when its petition was approved by the Executive Council in Ames, IA, on October 30. This followed a gathering attended by 29 alumni and nine guests in the Alabama city October 21. With much enthusiasm and excitement, 24 alumni signed the petition for a new alumni chapter.

—**Joshua D. Crook**, AL Δ '12, jdc0024@uah.edu

Tampa Bay Alumni Chapter followed its reactivation in April with margaritas, guacamole, and a side of engineering conversation for a great first happy hour at Miguel's Mexican in Tampa. The chapter brings engineers in the region of all skill levels together to provide a springboard for grads and a soundboard for more seasoned engineers. More events are planned for the future. Contact the chapter president:

—**William L. Collins**, FL Γ '75,
wcollins@tampabay.rr.com

Texas Gulf Coast Alumni Chapter reactivated in Houston last January with a new slate of officers elected in February. They are President **Bradley W. Utz**, OH H



'78; Vice President/Treasurer **Sarah Brumbaugh Snell**, NC A '08; Secretary **Robert J. Ontko**, OH A '11; and Webmaster **Haridyal Jaswal**, NY H '09. The reactivated

chapter had several social events in the greater Houston area and supported the area's student chapter initiations and calls for engineering speakers.

—**Bradley W. Utz**, TXGulf.TBPAlumni@gmail.com

Twin Cities Alumni Chapter is looking for more officers and leaders to help in running the chapter and organizing events for alumni in the Minneapolis-St. Paul area. If you are interested in helping lead the chapter, please contact Tricia Gomulinski at tricia@tbp.org.

GET INVOLVED WITH TAU BETA PI

Check out the list of active alumni chapters at www.tbp.org/Memb/alumniContacts.cfm and connect with alumni in your area. There may be a chapter near you! If not, contact Director of Alumni Affairs, Tricia Gomulinski, at tricia@tbp.org for other possibilities.



ALUMNI NOTES

Arizona Gamma

Maverick T. Gibbons, P.E., '96, is a project manager in the large projects group at Granite Construction, based in the Salt Lake City, UT, area. He has spent 17 years with Granite, specializing in estimating and managing urban transportation projects and working on a number of award-winning projects.

California Alpha

Sanjay Mehrotra, '78, is president and CEO of computer memory multinational SanDisk, which he co-founded in 1988. Since then, he has also served as its executive vice president and COO, senior vice president of engineering, vice president of product development, and director of memory design and product engineering. Mehrotra also serves on the board of directors of Cavium, Inc. and the Global Semiconductor Alliance, the engineering advisory board at UC Berkeley, and the Stanford Graduate School of Business advisory council.



California Delta

Sabha Ganai, M.D., Ph.D., '97, is director of gastrointestinal oncology and an assistant professor of surgery at the Simmons Cancer Institute at Southern Illinois University in Springfield, IL.

California Theta

Michael D. McClay, '73, has retired after 40 years from Raytheon Company where he was a senior engineering fellow with their space and airborne systems business. A graduate of CSULB, he



served on the electrical engineer department's advisory and development council for the past 20 years. Mike and Kathy will settle outside Wasilla, AK.

California Mu

Andrew P. McDevitt, '06, is an associate attorney with Walkup, Melodia, Kelly & Schoenberger, a San Francisco-based personal injury law firm. He is a 2010 graduate of UC Hastings College of the Law. From 2008 to 2010, he worked as a law clerk for the firm. McDevitt utilizes his mechanical engineering background in the representation of both person injury and wrongful death clients.



Colorado Zeta

Col. Robert J. "Dash" Kraus, Ph.D., '91, is chief scientist and director of research at US Air Force Academy (USAFA). Previous appointments include director of the commanders action group and dean of the faculty at USAFA. He has also been an experimental test pilot and C-141 aircraft commander.

DC Gamma

Juan F. Betts, Ph.D., '96, is founder and managing director of Front End Analytics LLC, headquartered in Boston, MA. FEA offers integrated engineering product development services and CAD/CAE technology implementations.



Previous occupations included three years at NASA Langley Research Center during his Ph.D. dissertation and later as an aerospace engineer for Lockheed Martin's Space Operations.

Florida Delta

David W. Woods, P.E., '81, is owner of TECreation Development, LLC, which he founded in 2006 to develop efficient products. He was just issued his second US patent for highly efficient swim fins and is working to bring them to market through crowd funding. Woods owns an 80,000-square-foot warehouse in Longwood, FL, the home of Familab, a local hackerspace, and is president of TEC Engineering, Inc., a civil engineering firm he founded in 1991. He also mentors new inventors as vice president of the Inventor's Council of Central Florida.



Indiana Alpha

Konstantina "Nadia" Gkritza, Ph.D., '06, has joined the faculty at



Purdue University as associate professor of civil engineering and agricultural and biological engineering. She was previously an assistant professor at Iowa State University and director of the Sustainable Transportation Systems Program (STSP) at the Institute of Transportation. Nadia received her diploma in civil engineering from the National Technical University of Athens, Greece, in 2001. She gained her M.S. at Virginia Polytechnic Institute and State University and then her Ph.D. in civil engineering in 2006 at Purdue.

Louisiana Beta

Robert F. Buesinger, '78, is senior vice president of vinyls at Westlake Chemical Corp. in Houston, TX. He has over 30 years of chemical industry experience including an overseas assignment managing the Asia

Pacific Region for Chevron Phillips Chemical based in Singapore. Buesinger also serves as the chairman of The Vinyl Institute.

New Mexico Gamma

Anthony L. Montoya Jr., P.E., '02, is chief engineer, water resources planning and engineering division at Albuquerque Bernalillo County Water Utility Authority in New Mexico.

New York Delta

Gary M. Cokins, '71, was one of the first two recipients of the annual distinguished member award established by The Institute of Management Accountants. Cokins' career spans 40 years as an expert, speaker, and author in performance improvement and cost management. Cokins served as financial controller of FMC Corporation and in business development for SAS, a provider of analytics software. Cokins is also featured in the National Baseball Hall of Fame and Museum for being co-writer during his 1970 Cornell game theory course of the oldest computer baseball game.



North Carolina Delta

Patricia A. Tolley, Ph.D., P.E., '88, is an associate professor and associate dean for undergraduate experiences at the University of North Carolina at Charlotte's college of engineering. She is a mechanical engineer specializing in mathematics education.

Puerto Rico Alpha

Sandra L. Cruz-Pol, Ph.D., '87, is a professor of electrical engineering at University of Puerto Rico and has been chosen as a member of the NRC active sensing committee of the National Academy of Sciences. The committee is to study increasing radio spectrum



bandwidth to accommodate demand from new technologies without affecting scientific studies. She will analyze different frequencies to recommend which bandwidths can be freed for commercial use. Cruz-Pol is a past Chief Advisor to her chapter.

Norma I. Torres Torres, '12, has received a National Science Foundation (NSF) Graduate Research Fellowship. She is studying for her graduate degree in environmental and water resources engineering and is working on the effect of climate and hydrologic conditions on groundwater contamination in karst aquifers.



Rhode Island Alpha

Lennard M.A. Hachmann, '98, is an associate director, pharmaceutical development at Novartis in San Carlos, CA. He was a 1998 TBII Fellow.

Texas Beta

John T. Foster, Ph.D., '02, is a University of Texas at San Antonio researcher and assistant professor of mechanical engineering. He will play an important part in a \$7.5 million Department of Defense contract to advance understanding and use of a new



mathematical modeling theory called peridynamics, which allows scientists to more accurately predict material failure. This could allow for significant improvements in the safety and cost of materials in airplanes and cars, as well as assisting in energy production technology. The project is part of the federal government's Multidisciplinary University Research Initiative (MURI). Foster is the new Chief Advisor for Texas Mu.

Utah Beta

Thomas R. Ingersoll, '85, is CEO of Skybox Imaging, which is combining



web technology with a constellation of microsatsatellites to plot daily global activity, from shipping to crop intelligence. The aim is to

launch two satellites by the end of 2013, empowering commercial and government customers to make informed, data-driven decisions. Ingersoll, top, was most recently the cofounder and CEO of Universal Space Network (USN), a



leading provider of global ground station services to the satellite industry. **James G. McClelland, IL A '86**, left, is Skybox vice president, mission assurance. He

previously spent 15 years at DigitalGlobe (DGI), a mid stage start-up company focused on the emerging commercial remote sensing market. They are joined by **Michael D. Trella, IN F '04**, vice president, satellite systems. He

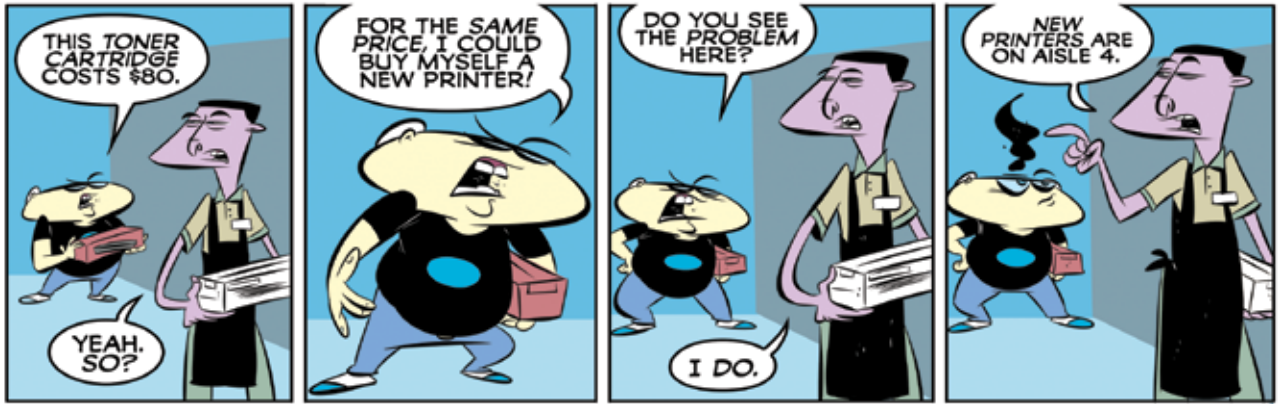


was a member of the space systems applications group at The Johns Hopkins University Applied Physics Laboratory and worked as a satellite systems engineer on NASA's groundbreaking MESSENGER and STEREO missions.

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