



# THE DEPARTMENT OF ELECTRICAL ENGINEERING NEWSLETTER Spring 1993

## ■ TWO EE's DISTINGUISHED ENGINEERS

Capt. Charles Bassett, BSEE '60, and Dr. Gary B. Wood, Ph.D. '77, were recognized as Distinguished Engineers during the 1993 Awards Luncheon. Bassett had been posthumously elected to the Texas Tech Electrical Engineering Academy and Wood automatically becomes a member of the Academy.



**CAPTAIN CHARLES A. BASSETT**, BSEE '60, graduated with high honors from Texas Tech as a member of the Air Force Institute of Technology program. He is remembered by Dr. Russell Seacar, his teacher and former chairman of Electrical Engineering, "as one of the best students I ever had. . . an extremely competent man, a real leader in his class and a gentleman, too. . ." Captain Bassett was in the 3rd group of astronauts

selected by the National Aeronautics and Space Administration. He was to be one of the two astronauts for the Gemini IX mission and was chosen for an extended space walk. On February 28, 1966, shortly before the Gemini mission, he was killed in a plane crash with his fellow astronaut, Command Pilot Eliot M. See, Jr.

Captain Bassett left a heritage of undaunted courage and determination to stretch himself to his highest potential. He was a fighter pilot, a test pilot, a test pilot instructor, and an astronaut—he could do it all!

He soloed at 16, entered Ohio State University as an aeronautical engineering major in 1950 and left in 1952 to go into the U.S. Air Force aviation cadet program. Although he went to Korea immediately after training, he was too late to fly combat, one of his few disappointments in a career of milestones. He flew F-86 aircraft in the 8th Fighter Bomber Wing.

In 1958, Captain Bassett was awarded the Air Force Commendation Medal for meritorious achievement. He risked his life in saving an F-86 aircraft from total destruction by moving the aircraft from the direct line of fire of missiles and rockets exploding from an F-102 aircraft.

After graduation from Texas Tech in 1960, Bassett was assigned to the Rocket Test Facility at Edwards AFB, California. He soon entered the Experimental Test Pilot Course and received the Empire Test Pilot's School award for outstanding academic achievement at his graduation. He then entered the Aerospace Research Pilot School, which he completed in 1963, receiving the A.V. Honts Award for outstanding participation and achievement. He noted that he had "the best test pilot's job in the Air Force flying classified airplanes hardly anyone knew existed." Only the astronaut's program could take him higher and faster. Upon receiving his assignments, he was overjoyed—"I think it's probably one of the neatest experiments of any."

Captain Bassett made numerous speeches to the public and, especially, to students, stressing the value of education and the importance of setting high goals. A good husband and father, a dedicated Air Force officer, and an outstanding astronaut, he was buried in Arlington cemetery in Washington, DC with full military honors.



**DR. GARY B. WOOD**, BSEE '73, MSEE '75, and Interdisciplinary Ph.D. '77, was an honor student, serving as president of an award-winning chapter of Tau Beta Pi as well as of his fraternity SAE. His doctoral work emphasized accounting, law, systems analysis and statistics and his career took him in the direction of finance and investments. As a Registered Investment Advisor, Dr. Wood says that he has "applied the disciplines of

the 'engineering approach' to day-to-day professional activities."

Dr. Wood founded The Concorde Group of Companies in 1981 which provides financial and investment consulting and money management services for individuals, corporations, trusts, and foundations. He is President, Treasurer and Director of Concorde Value Fund, a non-load, public mutual fund that has been ranked in the 11th percentile of all public mutual funds. In 1982, he founded the health care and medical technology investment and management firm of OmniMed Corporation and serves as an officer on the boards of many medical products and care companies in which he and his investors hold substantial interest. These companies include American Plasma, International Hospital



**I.C. "Clive" LANKFORD, JR.**, served as the Director of Electrical Engineering Laboratories and Lecturer for 23 years and retired in 1974. During this period there were no electrical engineering students that did not come in direct contact with Mr. Lankford and all benefited from his vast practical knowledge and tremendous insight into electrical systems. This coupled with his deep interest in students and ability to teach and demonstrate electrical

engineering principles, has made him a legend in the department. The I.C. Lankford Lab was named at the request of the faculty, students, and Dean of Engineering.

The strength of the electrical engineering undergraduate program has been and continues to be the project labs that were established in 1960 by Mr. Lankford. He first designed and developed the laboratory sequences and implemented his ideas with minimum help. Mr. Lankford built most of the equipment first used in laboratory projects. Later more modern equipment was purchased and some was obtained from surplus areas, saving the department between 70-80% of the cost to run these important laboratories. His feat of coming up with 800 laboratory projects in three weeks prior to the first laboratory sequence was remarkable. After retirement he continued to show his concern for the department by assisting students with lab projects and acting as guest lecturer on EE power and transmission for faculty. He was the only active lecturer using his "own" room. To quote a portion of the final statement of the 1986 ABET visit — "An unusual project-oriented laboratory sequence, the centerpiece of the Electrical Engineering program, is used to provide students with realistic experience in engineering design and project management. Students are assigned projects that require them to seek out the necessary information and technical data."

Texas Tech University's Department of Electrical Engineering strive for excellence was launched by Clive's introduction of these project labs. Mr. Lankford made other major contributions: (1) he developed the two year associate degree at Amarillo College, Amarillo, TX; (2) he initially developed the Electrical Technology program at Texas Tech University; and (3) he assisted graduate students in developing difficult measurement schemes to obtain experimental data.

He was an outstanding engineer and a pioneer in electrical engineering education. He is a member of the Russell H. Seacat, Jr. Scholarship Founder's Committee.



**DR. ROBERT J. MARKS, II**, Ph.D. '77, received a BS and MS from Rose-Hulman Institute of Technology, which recently honored him with the Outstanding Young Alumni Award "for having distinguished himself among his peers and for having used his education for the betterment of mankind..." Dr. Marks is a Professor of Electrical Engineering at the University of Washington in Seattle.

As a researcher and prolific author, he has published three books, three chapters, 61 articles, and 56 conference papers. His colleague at Texas Tech in neural networks and optics, Dr. John Walkup, described him as one of the most creative research engineers he has ever known. He has also been a leader in IEEE, serving as the IEEE Neural Networks Council's charter president, honored as IEEE Distinguished Lecturer (1991-1992) and given the IEEE Centennial Medal and Certificate (1984). He is a Fellow of the Optical Society of America and was co-founder and president of the Puget Sound Section.

Dr. Marks is Editor-in-Chief of the *IEEE Transactions on Neural Networks* (1992 to present) and Association Editor of the *IEEE Transactions on Fuzzy Systems* (1993 to present). He is also an editor of the *Journal of the Optical Society of America* and on the editorial boards of the *International Journal of Neurocomputing* and the *Journal of Intelligent Control, Neurocomputing and Fuzzy Logic*. He has chaired and helped to organize the programs of many international conferences, and is the Organizing Chair for the IEEE Virtual Reality Annual International Symposium for 1993 in Seattle.

A member of the Board of Directors of Raytron Corporation, Dr. Marks has also established his own company, Multidimensional Systems Corporations, and holds two patents related to neural networks.



**BERNARD A. SCHMIDT**, BSEE '29, began his engineering career with General Electric Company, Schenectady, NY, testing electrical equipment (induction motors, circuit breakers and industrial controls) to determine operating characteristics and performance. Mr. Schmidt worked at General Electric when Albert Einstein worked there. He was employed by Southwestern Public Service Co., Amarillo, as an assistant power plant operator, a distribution engineer, and design engineer for underground feeder systems from '31 to '36. He worked as

a design engineer of transformer vaults for the underground distribution department of the Dallas Power and Light Company from '37 until the beginning of World War II when he began work for the U.S. Navy, Bureau of Ships, in San Francisco. He worked as an electrical engineer responsible for design approval of all electrical changes aboard ships, which included cruisers, destroyers and destroyer escorts.

In 1948, he formed the American Electric Company at Lubbock in partnership with C.M. Anderson, which was incorporated as Amco Electric Co., Inc. in 1964. He worked on many projects at Texas Tech including Holden Hall, the library, the underground system, and the stadium lighting. Mr. Schmidt was in the first 4 year EE graduating class which consisted of four graduates. His framed diploma hangs in the Bullen Room.



**LAWRENCE G. SCHMIDT** (Larry), BSEE '63, MSEE '67, is President of the Texas Instruments/Martin Marietta Javelin Joint Venture. He is also Vice President and Manager of the Defense Systems and Electronics Group of Texas Instruments in Dallas. He has responsibility for the development of the Javelin, Anti-Armor Weapon System.

Larry Schmidt has progressed through a series of increasingly responsible positions at

Texas Instruments, demonstrating both his technical expertise and his management acumen. He joined the company in 1969 as a design engineer on the Laser Guided Bulldog Missile program. From 1977 to 1981, he was responsible for the design and development of the imaging and non-imaging infrared missile guidance systems. He went on to become the engineering manager for HARM in the Defense Suppression Division and took the project from initial development through the first two years of production.

He also served as division manager of the Microwave Technology & Products Division, which developed and produced RF antenna components and systems and microwave devices and systems. As division manager of the Airborne Systems Division, he oversaw the development of airborne infrared optical systems. Most recently, he was vice president and manager of the Defense Suppression Division, where he had responsibility for the production and development of HARM and other programs.

### PHONATHON ALERT

THE EE STUDENTS HAVE SELECTED THE DATES OF OCTOBER 19, 20, 21 FOR THEIR '93 EE PHONATHON. YOUR SUPPORT OF THEIR FUND-RAISING EFFORTS WILL BE GREATLY APPRECIATED.

## PRABHAKAR APPOINTED AS DIRECTOR OF NISI

**Dr. Arati Prabhakar**, BSEE TTU - '79, Ph.D. CalTech - '84, was nominated to be the Director of the National Institute of Standards and Technology (NISI) by President Bill Clinton, and has been confirmed by the Senate. The first woman to receive a Ph.D. in applied physics at CalTech, Arati, has held positions ranging from Congressional Fellow of the Office of Technology Assessment to Director of the Microelectronics Technology Office at the Defense Advanced Research Projects Agency, where she was credited with creating a new office driving the research, development and demonstration of advanced microelectronics technologies critical for national security, with emphasis on dual use technology. Charged with making industry competitive, advancing science and improving public health, safety and the environment, the NISI has 2000 employees with an annual budget of around \$400 million. The new administration has asked to double its budget to \$800 million in the next four years.

## AYLOR RECEIVED "DARE TO BE GREAT" AWARD

Texas Tech tight end, Scott Aylor, junior in Electrical Engineering, was awarded the Red Raider's "Dare To Be Great" Award. The award goes annually to the football player who demonstrates the most devotion to the work ethic on and off the football field during spring training and off-season drills.

"Scott's excellent work habits from the classroom carried over into the off-season program," said strength and conditioning coach Joe Juraszek. "He was always there early in the morning. He was there for every workout every day."

Scott Aylor is a 3.1 GPA scholarship student from Round Rock and is a projected starter for the Raiders next season. He is listed at 6'4" and 235 pounds.

## GUNDERSEN MAKES WALL STREET JOURNAL

"Martin Gundersen, a physics professor at the University of Southern California is trying to turn the pulsed power technology originally developed for Star Wars into a commercial antipollution weapon" — this is part of a write-up that appeared in the Technology section of the April 13, 1993 issue of the *Wall Street Journal*. His big plasma discharge cell has the potential to dissolve toxic solvents, as well as harmful sulphur oxides found in factory smoke. If made more efficient, Martin's pulsed power system could be the pollution-reducing technology of the future. Gundersen is a former faculty member in electrical engineering.

## ALUM NEWS

**Karan Watson**, Ph.D. '82, Associate Dean of Engineering at Texas A&M University, was appointed to the IEEE Education Activities Board Curriculum Committee and elected to the Board of Directors of the Women in Engineering Program Advocates Network. Karan also directs four contracts totaling \$700,000 and ranging from Advanced Manufacturing for Compaq Computer, Inc. to a Development of Education Area of National Needs Fellowships.

**Bill Edwards**, MSEE '78, is the head of a Design Engineering Group for Bechtel "Nuclear Power" at Morris, IL. The group improves, upgrades and repairs nuclear power electric generating plants.

**Bill Helton**, BSEE '64, Chairman and Chief Executive of Southwestern Public Service Co. (SPS), was featured in *Forbes*, March 1, 1993, as the head of one of the nation's best-run utilities. Bill, 54, worked for SPS while working on his BSEE. He started to work for SPS after finishing high school. Mr. Helton is a member of the Texas Tech University Electrical Engineering Academy and a Distinguished Engineer.

**Joe A. Brown**, BSEE '69, Past Chairman of the Electrical Engineering Industrial Advisory Board, was selected as a member of the Sulphur Springs Athletic Hall of Fame.

## OBITUARIES

**Bernard Schmidt**, EE Academy member, died April 4, 1993, after a lengthy illness. He was recognized as a Texas Tech University Electrical Engineering Academy member at the EE Spring Banquet held the evening of April 1, 1993. His daughter accepted his plaque. Prior to his death he saw his plaque and a video of the banquet.

**Billy Gene Mathis**, BSEE '57, died January 2, 1993 in Houston, TX. He was employed by Brown and Root for 25 years. At his retirement, he was an electrical engineer in Quality Assurance.

### HOMECOMING 1993

Homecoming Open House

October 16, 1993

3:30 -5:30 p.m.

C.V. Bullen Room

226 Electrical Engineering Building

Football Game

Rice vs. Texas Tech Red Raiders

7:00 p.m.(currently scheduled)

The faculty, staff and students are looking forward to the Ex's return for Homecoming. Tours will be conducted during the reception hours. Come and enjoy old friends and refreshments.



## SANDI ELECTED VICE PRESIDENT

Sandi Willingham, the department's administrative secretary, was elected as District III Vice President of the American Business Women's Association. She is responsible for overseeing grants and interest free loans to women who are beginning their education or who have returned to college. Mrs. Willingham also acts as a trustee of the Stephen Bufton Memorial Education Fund which last year awarded more than \$585,000 in grants and interest free loans to women seeking educational advancement. As one of nine ABWA National Board of Directors, Sandi represents 8 states. She is also a member of the Red Raider Club, National Association of Secretaries, National Association for Female Executives and Sports Car Club of America. Sandi and her husband, Steve, are also members of the Russell H. Seacat, Jr. Scholarship Founder's Committee.

## HEV CHALLENGE

Electrical and Mechanical Engineering students at Tech participated in the Hybrid Electric Vehicle Challenge sponsored by the Ford Motor Company, the Department of Energy, and the Society of Automotive Engineers. A Ford Escort was furnished. Keeping changes to a minimum, the overall goal was to produce a hybrid electric vehicle that would be cost effective and realistic to produce.

The auxiliary power unit (APU) was a 650 cc single cylinder, water-cooled motorcycle engine powered by ethanol. The electrical power system consisted of two 28 HP AC induction motors, sealed lead acid, 12 volt batteries with 90.8 amp-hour rating on a ten-hour rate. The batteries were cascaded in a series configuration to give the 144 volts required by the two induction motors. A motor controller was designed to change the DC power to a 3-phase AC power. The overall design was based on minimizing emissions and cost while assuring performance and capability.

This project was a multidisciplinary project with students participating from Electrical Engineering, Mechanical Engineering and Engineering Technology. The students participating from Electrical Engineering included Vincent Tyson, Casey Bowles, Krista Reed, Bradley Stover and Steve Nisbet. The Texas Tech team placed 9th in oral presentation, 12th in overall design, and 11th in the paper competition. This was an outstanding performance considering the funding and level of support their competition received.



Front Row (L to R):  
Kwong S. Chao, Martin Gundersen, Marion Hagler, Thomas Krile, Fabrizio Lombardi, Stan Liberty, Karl Schoenbach.

Back Row (L to R):  
Hermann Krompholz, Arnold Gully, John P. Craig, Donald Gustafson, M. Kristiansen, Erich Kunhardt, Travis L. Simpson, Richard Saeks, John D. Reichert, Thomas F. Trost, Frazer Williams.

## ■ TEXAS TECH FACULTY REUNION

On February 19, 1993 a symposium on "Recent Advances in Electrical Engineering" served to bring back to the Texas Tech University Electrical Engineering Department many of the former faculty members. "Coincidentally" this was also the time for Travis Simpson's retirement. The symposium was well attended and successful. All the papers presented were stimulating and interesting and proved the great success of this outstanding group of "young" (at least 10 years ago) faculty members. It was a time for great fellowship, sentimental remembrances, and some good, old-fashioned parties.

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### SPECIAL SYMPOSIUM ON RECENT ADVANCES IN ELECTRICAL ENGINEERING

TEXAS TECH UNIVERSITY  
February 19, 1993

- "Texas Tech University, Department of Electrical Engineering"  
Overview  
Marion Hagler, Texas Tech University
- "Plasma and Pulsed Power Research at Texas Tech University"  
M. Kristiansen, Texas Tech University
- "On the Design of a Neural Network Co-Processor"  
Richard Saeks, Accurate Automation, Inc.
- "Overview of Computer Science Activity at Texas A&M University"  
Fabrizio Lombardi, Texas A&M University
- "Coherent Imaging Theory"  
John D. Reichert, Phillips Laboratory
- "Research at the University of Nebraska/Lincoln"  
Frazer Williams, University of Nebraska
- "Pulsed Power Research at the University of Southern California"  
Martin Gundersen, University of Southern California
- "Assessing Engineering, Faculty Effort  
and Productivity Across the University's Mission"  
Stanley Liberty, Dean, University of Nebraska
- "Quantum Engineering: Where Quantum and Waveguide  
Theories Meet"  
Erich Kunhardt, Stevens Institute of Technology
- "Conduction at High Fields in Diamond and GaAs Switches"  
Karl Schoenbach, Old Dominion University

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