The Academy of Engineering Excellence
presented by the
Virginia Tech
College of Engineering
and the
Advisory Board
of the Committee of 100
The Academy of Engineering Excellence

Virginia Tech’s College of Engineering and the members of its Committee of 100 Advisory Board established an Academy of Engineering Excellence in 1999.

Membership in this Academy is reserved for individuals holding an engineering degree from Virginia Tech’s College of Engineering who have made sustained and meritorious engineering and/or leadership contributions during their careers. Initiates have reached the pinnacle of their professional achievements and will normally have been alumni for 40 or more years.

The College of Engineering and the Advisory Board anticipates inducting no more than ten individuals as members of the Academy of Engineering Excellence annually. This selection is made from some 40,000 living alumni of the College of Engineering.

Nomination Process

Nominations will be sought annually at the Fall meeting of the Committee of 100. The deadline for receipt of nominations will be in late summer, the actual date will be decided each year by the Advisory Board and announced in a letter to the members of the Committee of 100. Nominations may be submitted by members of the Committee of 100, members of the Advisory Board, the Dean of Engineering, and department heads in the College.

Selection Process

All nominations will be reviewed by a sub-committee of the Advisory Board consisting of three Board members and the Dean. The sub-committee will submit its recommendations for Academy membership to the Fall meeting of the Advisory Board. The Advisory Board will make the final decision on newly-elected candidates. No more than ten members may be inducted in any single year. Newly-elected members will be notified and asked to accept membership before any public announcement is made.

Nomination Form

Print out the nomination form, complete it, and mail it to the Dean of Engineering, Virginia Tech, 3046 Torgerson Hall (0217), Blacksburg VA 24061.
## The Virginia Tech College of Engineering Academy of Engineering Excellence

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### Outstanding Young Alumna

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**NOTES:**

- Each profile of the Academy of Engineering Excellence honoree was written at the time the person was inducted.
- Also, the year of induction is indicated in parentheses after the inductee's name.
Dr. Kyle T. Alfriend
B.S., Engineering Mechanics, 1962
Ph.D., Engineering Mechanics, 1967

Kyle “Terry” Alfriend has enjoyed more than 40 years of diverse experience in the aerospace field, yet he finds his most challenging work still lies ahead. Two of his current projects are space surveillance and the dynamics and control of swarms of small satellites flying in a precise formation.

A well-respected researcher, his contributions led to the highest honor for an engineer, membership in the National Academy of Engineering. He is also a Fellow of the American Institute of Aeronautics and Astronautics and the American Astronautical Society (AAS).

As a child he became intrigued with the aerospace industry as did many of his peers growing up in the Sputnik era. The Danville, Va., native entered Virginia Tech in 1958, and selected the engineering mechanics (EM) curriculum to complement his interests. His scholarship attracted the attention of the department who would remember him long after his graduation in 1962.

He secured his first employment with the aviation giant Lockheed, and settled with his wife Bonnie in California. The company assisted him in his pursuit of a master’s degree from Stanford that he obtained in 1964. Subsequently, Lockheed transferred Mr. Alfriend to Huntsville, Ala. He soon felt an itch to get back to school and stopped in Blacksburg on a trip back to Virginia. His mid-August meeting with Dan Pletta, then the EM Department Head, proved fortuitous. “Dan told me he had a fellowship available,” Mr. Alfriend recalls, so he made a hasty decision to quit Lockheed and return to Virginia Tech to obtain his doctorate, again in EM.

With a Ph.D. attached to his name, Dr. Alfriend moved in 1967 to Cornell University for the next six years as an assistant professor of theoretical and applied mechanics. In 1973, he joined the NASA/Goddard Space Flight Center where he was awarded a one-year research associateship by the National Academy of the Sciences to conduct research on methods of orbit prediction and determination. In 1974 he became the Director of the Naval Research Laboratory’s Advanced Systems Branch of the Space Systems Division. His group worked on advanced technologies and techniques that had applications to space systems. In 1983 he joined the Office of Development and Engineering of the Central Intelligence Agency where he was responsible for the development and application of advanced technologies to intelligence space systems.

In 1985, Dr. Alfriend opened the office for the General Research Corp., now known only as GRC, in northern Virginia. He quickly expanded its operations to 15 technical staff and approximately $2 million of annual funding, mostly in the area of advanced technologies for space systems.

After nine years, Dr. Alfriend was named to the Navy TENCAP Space Chair for three years in the Space Systems Academic Group at the Naval Postgraduate School, Monterey, Cal. He moved to Texas A&M in 1997 to head its Department of Aerospace Engineering. Within two years of his arrival the department’s research budget increased 50 per cent. He was also named Chairman of the Board of the Texas Space Grant Consortium in 1998. In 2001 the University made him the Wisenbaker II Professor of Aerospace Engineering.

Today, Dr. Alfriend remains affiliated with Texas A&M, holding its Distinguished Research Chair as of Sept. 1, 2003. He resides in Pebble Beach, Cal., on a 100 per cent self-generated research salary. One of his main projects is the dynamics and control of formation flying satellites. Instead of one system, the NASA funded plan calls for the placement of a number of small satellites into orbit, traveling at four miles per second, 40 to 50 meters apart. “We will need to know the relative position of the satellites down to millimeters,” Dr. Alfriend explains. These systems should be easier to repair and should prove more economical.

His second main challenge today is to work on an Air Force contract to catalog space debris. Some 10,000 objects are currently tracked in space, but to protect structures such as the space station, 10 times that number must be kept under surveillance. Previously, Dr. Alfriend developed a new method for correlating many of the tracks of objects detected by the Space Surveillance system that do not correlate to objects in the Space Object catalog. He also created a technique for estimating the space object population and distribution.

Among his numerous honors, Dr. Alfriend received the 1998 AIAA Mechanics and Control of Flight Award, the 1989 AAS Dirk Brouwer Award for outstanding contributions in spaceflight mechanics and astrodynamics, and the 1981 Navy Meritorious Civilian Service Award. From 1992-95 he was the editor-in-chief of the AIAA Journal of Guidance, Control, and Dynamics.
Richard M. Arnold
Industrial Engineering
Class of 1956, BS

Richard Arnold has a distinguished Virginia Tech background – a star track athlete inducted into the university’s Sports Hall of Fame in 1996, service in the Corps of Cadets and several campus organizations – and a stellar career. He worked just shy of 30 years at Union Carbide Corporation, and then 12 years at Allied Signal. He was a production engineer, a plant manager overseeing 200-plus employees, a senior management consultant, and held jobs in corporate public affairs. He is a member of the Virginia Tech College of Engineering Committee of 100 and the Industrial and Systems Engineering (ISE) Academy of Distinguished Alumni, as well as the ISE advisory board.

John Casali, a former head of the Virginia Tech ISE department says: “Dick has been a superb champion for our department as well as an outstanding ambassador for the college.” Bill Stephenson, former dean of the College of Engineering, regularly golfs with Mr. Arnold. Stephenson admires his athletic accomplishments and his support of the university athletic teams and other campus related organizations.

Yet, it’s Mr. Arnold’s work outside of engineering that stands out as treasure to anyone who enjoys hearing the tale of a man at the crosswinds change of history. In 1989, when the Berlin Wall fell, many Americans watched the historic events live on television and that was the extent of their involvement. Not so, Mr. Arnold. His United Methodist church in Morristown, N.J., was one of the first congregations in the United States asked to lend a hand – spiritually, monetarily and physically – in rebuilding the Methodist church behind the torn Iron Curtain.

People of all religious persuasions practiced their faith under threat of death, prison or discrimination for decades under Communist rule. Circa 1990, with the hammer and sickle gone and statues of Lenin toppled, religion could breathe and begin to grow again. Mr. Arnold took his first trip in November 1992, lending CPR to that effort. “God just touched my heart that I needed to get involved in this,” he says.

On his first trip to Moscow, Mr. Arnold saw Red Square, as well as a statue of Lenin pulled to the ground in front of the former KGB headquarters. In its place was a large wooden cross. Mr. Arnold’s first missionary work in Kerch, Ukraine, was heartening. “Most religions had been destroyed after more than 70 years of repression,” Mr. Arnold says. He traveled numerous times to Kerch helping oversee the selection of new lay pastors, training people in how to conduct “church” and raising funds for a building. He mentored one young woman for several years as the local
pastor, then helped her go to the Moscow Seminary. The woman now is a district superintendent near St. Petersburg, Russia. Some 15 years later, the Russia/Ukraine region has a bishop, full-time seminary, and more than 100 local churches.

Mr. Arnold came to Virginia Tech in 1952, after growing up in Niagara Falls, N.Y., Lakewood, Ohio, and Pelham Manor, N.Y. Mr. Arnold’s father recruited engineers for his company and told young Richard, “If you want to study engineering in the South, there is Georgia Tech or Virginia Tech.” He traveled to the Blacksburg campus, toured it and knew he had found a home. “I loved the campus and people. The track coach was excited about my going here, and the industrial engineering program was terrific and a lot less expensive then the places I was looking at up north,” he says.

During his college years, he served in the Corps of Cadets for two years before moving to the athletic dormitory for a year, and then marrying and living off campus his senior year. He ran track all four years, served as co-captain his senior year, and did well enough to later score induction into the Virginia Tech Sports Hall of Fame. Mr. Arnold was invited to try out for the 1956 Olympics, traveling to New York City for regional heats. He missed qualifying by one place.

Upon graduation, he landed a job with Union Carbide, where he stayed for roughly 30 years. He began as a production engineer at a West Virginia metallurgical plant. There, Mr. Arnold was tasked with the operations of the plant’s electric-arc furnaces. He later helped initiate the first industrial engineering function in that division. The company transferred him to Kokomo, Ind., to work as a manager of industrial engineering at a specialty alloys plant. He concurrently earned a master’s degree in IE from Purdue in 1966.

From there, Mr. Arnold moved to Chicago, where he worked as the plant engineer and then plant manager of two fibers and fabrics facilities, with 200-plus employees under his watch. The facility produced non-woven textiles for commercial building filters, interior car doors and floor buffers. After that portion of the business was sold by Union Carbide, Mr. Arnold moved to the company’s New York world headquarters, where he moved through the ranks from senior management consultant to director of community affairs and then assistant director of regional public affairs. As director of community affairs, he implemented a nationwide program for all plants based on a cutting edge community assessment process he developed. The public affairs task included lobbying on the behalf of Union Carbide. He worked mostly with state legislatures and congress to make sure legislation they passed wasn’t detrimental to the company.

Mr. Arnold left Union Carbide shortly after the infamous 1984 Bhopal disaster, in which several thou-
Thirty-eight years after graduating from Virginia Tech with a bachelor’s degree in engineering science and mechanics, Pat Artis’ love of his alma mater has not wavered. It has grown. Named the College of Engineering’s Distinguished Alumnus in 2008, Mr. Artis has repeatedly donated both time and money to the university. When accepting the 2008 honor, he said matter-of-factly, “We were given a chance and we worked hard. We still have many close friends in the College of Engineering and our gift embodies our belief in the value of the education that it provides. Everything else in life is embroidery.”

Indeed. Pat and his wife, Nancy, have helped set the path for many students at Virginia Tech. The Artises recently donated money to open the Liviu Librescu Student Engagement Center on the second floor of Norris Hall. It is named after the engineering faculty member who sacrificed his life by holding shut a door to allow students to escape during the shootings of April 16, 2007. A framed portrait of Professor Librescu hangs in the center, which includes three rooms built for students to work, read, figure out problems and help each other review academic material.

The Artises have provided funding for promising students to take courses at the National Test Pilot School in Mojave, Calif. For the Virginia Tech Corps of Cadets, despite Mr. Artis never being a member while a student, he and Nancy created the Barqawi ’09/Artis ’72 Emerging Leader Scholarship. The latter award is named for Adnan Barqawi, who was named the university’s Undergraduate Student Leader of the Year for 2009, for whom Mr. Artis has served as a mentor.

The couple has committed $10 million in monetary gifts to the Virginia Tech engineering science and mechanics (ESM) and aerospace and ocean engineering (AOE) departments, while also supporting nearby Radford University. Mr. Artis serves on the College of Engineering’s Campaign Steering Committee, and previously chaired the College Advisory Board. He and Nancy are members of the Legacy Society and Ut Prosim, and he has guest-lectured in the classroom. The couple also funded the Engineering Excellence in the 21st Century series, and brought well-known space industry figures such as Spaceship One pilot Brian Binnie to campus. Additionally, they have helped fund the space elevator student design team, which is dedicated to designing a transport structure that will reach from the earth’s surface into space.

“I can’t think of an alumnus who is more dedicat-
ed to our college and the department, more concerned about interdisciplinary engineering education and research, or more involved in enhancing the student experience through his philanthropy and personal efforts,” says Ishwar Puri, head of the ESM department. “Pat and Nancy have been there when we have needed them in very many ways. Their gift to furnish the Liviu Librescu Student Engagement Center is an example of their desire to honor both the sacrifice of a distinguished faculty member as well as help provide the best facilities and infrastructure for our students.”

Mr. Artis’ long relationship with Virginia Tech stems from his boyhood fascination with rockets, spurred by the 1957 launch of the Russian satellite Sputnik. The Ohio native was building and flying amateur rockets by age 11, with his eyes set on a career in aerospace engineering. (His father was more than glad to help with the rocket experiments.) While representing Ohio at a NASA Langley high school science symposium, he met several Virginia Tech engineering graduates. That encounter convinced him that Virginia Tech would be the first step toward his future. “It was clear that Virginia Tech had prepared them to be leaders in the space race,” Mr. Artis says.

Upon his arrival in Blacksburg in 1967, Mr. Artis soon gained notice for an award-winning American Institute of Aeronautics and Astronautics student paper on Coanda effect control surfaces for guiding rockets. His interests, though, moved from aerospace toward engineering mechanics. He started a summer/winter co-op program with Ashland Oil’s computer sciences and services department. “It was a great opportunity,” he says. “I could live at home, earn money for school, learn about computers, and I would not have to endure another winter in Blacksburg.”

By the second quarter of his sophomore year, the die was cast. Mr. Artis changed his major to engineering mechanics. For his senior project, he developed digital data collection interfaces for the department’s analog materials testing equipment. Graduating in 1972, he had a love of experimental mechanics and three years of experience with computer hardware and software architecture. This would spur a wildly successful career.

Bell Laboratories was the first company to come calling, offering the young graduate a job developing computer measurement techniques while he pursued his master’s and doctoral degrees in computer science. His Bell Lab projects included scheduling algorithms, multi-processor performance, hardware and software monitors, capacity planning, UNIX and storage performance. In 1978, he published a landmark paper on the application of statistical pattern recognition algorithms to the characterization of workloads for large-scale computer systems.

When Bell fell to the sword of deregulation, Mr. Artis returned to Virginia in 1981 to join Morino Associates, a start-up software company, where he led teams developing computer performance evaluation products. When that company went public in 1986, he set out on his own, forming Performance Associates Inc., which focuses on the characterization and performance of storage subsystems. In the two decades since, Colorado-based Performance has developed new industry standard tools for the characterization and testing for storage performance, reliability, and replication. Its clients include a plethora of Fortune 500 companies the world over.

That success has led the couple to travel widely to Europe, Asia, and Africa. His favorite destination spot, thus far, is Australia. “That’s the only country I’ve been to where if I were there and someone told me there would be no more flights going home, I wouldn’t be disappointed,” Mr. Artis says. Pat and Nancy use the trips to pursue their mutual interests in photography. Both are published wildlife and nature photographers and their work was highlighted during 2008 with an exhibit at the Virginia Tech Skelton Alumni Center.

All the while, Mr. Artis still hasn’t forgotten about the love that brought him to Virginia Tech. In 1993, he earned a flight test engineering certificate at the National Test Pilot School. He has logged more than 3,000 pilot-in-command hours in a variety of aircraft types and still enjoys amateur rocketry.

During the past four decades, Mr. Artis has published more than 100 papers on computer performance and has served as an officer of a variety of computer performance professional organizations. He received the A.A. Michelson Award from the Computer Measurement Group for his fundamental contributions to computer metrics in 1984.
Paul J. Baduini
Chemical Engineering, Class of 1972, BS

Paul J. Baduini’s father worked in the golf club/golf ball industry for a small company that was gobbled up by larger companies, which in turn were purchased by still-larger firms. As Baduini’s father moved up the ladder and from town to town, young Paul also moved. New Jersey, where the family started, turned to Pennsylvania, and then to Ohio, Michigan, and lastly Illinois.

The bouncing around was good practice for Baduini’s career. During a 30-year job at Rohm and Haas Company, he moved across the United States and then to Mexico and Brazil. Along the way, he also moved from the engineering floor to the board room, where he excelled at managing, with thousands of employees and hundreds of millions of dollars in yearly budgets for the Philadelphia-based company.

Baduini’s first move on his own was from home to college, when he came to Virginia Tech to study chemical engineering. He arrived in 1964, made keen on the area by a family friend. Baduini found a new love for the rural, a strong remove from his youth near Chicago and Philadelphia. “I found I liked the rural atmosphere a lot,” Baduini said.

But Baduini’s education at Virginia Tech would hit a snag in the form of the Vietnam War. Facing the draft and wary of a stint in the army, he enlisted in the Air Force and found himself stationed in Italy working on duties that included Cold War military surveillance.

After several years of overseas service and getting married to a woman he met at Radford College (at the time a woman’s college), Baduini returned to Blacksburg. While pursuing his degree, he worked in food services as a waiter, while his wife worked in an administration building. Upon graduation in 1972, he landed a summer job at Rohn and Haas’ Louisville, Ky., plant as a process engineer. He liked Rohn. The company liked him. Rather than leave for a master’s degree in chemical engineering, Baduini stayed.

Baduini enjoyed the challenge of the job, and the company’s unique niche as the world’s only trademark holder of Plexiglass and its venturing out into other products such as acrylic paints, finishes, and caulking.

After seven years, Baduini found himself as production area manager of the Louisville plant, overseeing its Plexiglass acrylic sheet and molding powder units. He ran quality control, cost oversight, and safety and environmental performance, reporting to the plant manager, and overseeing a $20 million operation.

In 1982 Baduini was transferred to Rohm and Haas’ Latin America division as director of operations, where he oversaw one plant each in Mexico, Brazil, Costa Rica, Venezuela, and Columbia. He boosted technical support and showed strong business leadership by introducing business concepts that focused on quality over results/costs, and knowledge of not just plant floor machinery and work, but individuals.

By 1984 Baduini was manager of all operations in Mexico, including the opening of a new Plexiglass acrylic sheet maquiladora. He was charged with employing 152 workers and a $52 million budget. Thanks to loosening business regulations in Mexico, Baduini helped oversee training of Mexican workers in the United States, and expanded the new plant to become one of Rohm’s best financial performers.

The next several years through 1993 saw Baduini heading to Brazil, where he oversaw all operations in the region, in addition to Argentina and Chile. With the move, his responsibilities grew to 250 employees and a $145 million operating budget. Following in line with Mexico and Latin America, business laws and international trading regulations relaxed in South America, spurring Baduini to redesign supply lines and improve sales forecasts. His efforts allowed Brazilian plant operations to cross from red into black.

Of his gifts in working in constantly influx foreign markets, Baduini said his gift was to find and connect the gifts of others, plugging them into the exact needed position, be it in engineering or financial.

“I was an engineer who knew a lot about business and a business man who knew a lot about the technology of the company and engineering,” he said. “I always saw myself as a bridge between the business side and the technology side of the company.”

Baduini, now a father of three, enjoyed the international work, becoming fluent in Portuguese and Spanish. His children, both born outside of the United States, were able to enjoy internationally diverse childhoods from birth. The children learned lessons of life, culture, and geography found in no classroom.

Baduini’s rise at Rohn and Haas pointed him back to one place: Philadelphia, where he was tasked with running the company’s ion exchange resins division in 1993. Atypical into any international movie cliché, the family actually had some difficulty fitting back into the American lifestyle. “Some children [had] probably never left their own town,” Baduini said, adding that small town culture was very different from Mexico City and Sao Paulo.

Baduini’s running of the resin division turned around an aging business model that was bleeding $15 million per year. Decisions were difficult as they often are in managing a multi-tiered, multi-national company. He cut three of nine plants and reduced product offerings to turn the unit around to profitability, to some $250 million in sales. He also helped win the division a “Star” award from the Occupational Safety and Hazard Administration, its highest level of recognition.
It was the first award of its kind for Rohm and Haas.

The strong efforts and know-how of the company from the top suites to the factory floor only spurred on Baduini’s rise at Rohm and Haas as he was named vice president and director of engineering for the entire company. His new position included a $460 million capital budget and all tech responsibilities, including advanced process control. Through new, savvy capital plans and outsourcing non-critical Rohn elements to outside vendors, Baduini was able to cut expenses to $350 million per year.

Richard Peterson, who supervised Baduini’s during the latter’s Latin American ventures, said he has long admired Baduini’s people and business skills. “Not too many people have that combination,” he said, adding that Baduini smartly and coolly chartered his efforts in those foreign markets, where political upheaval and see-sawing inflation are the norm. “He could be dead serious, but he knew how to stay positive and he had a great sense of humor at the right moment,” Peterson said during a phone interview.

After 32 years, Baduini retired from Rohm and Haas in 2004. But he didn’t leave the industry altogether. For several years, he took his engineering and business suite knowledge and worked as a consultant, helping private equity companies invest in chemical-related industries. In short, he taught the MBAs how to know the inner workings and operations of chemical firms. His freelance work here took him, again, to international and multi-lingual markets for travel, including Australia, and closer to home in Puerto Rico.

Retired in California – he made a move from New Jersey to the Golden State just this past year – Baduini spends much of his time with nearby family or on the golf course. “The climate is spectacular,” he said, adding that shoveling Jersey snows is a chore of the past, not missed one iota. “We can play golf all year long. Our house here backs up to a golf course.”

His travel days are seldom now, except for a rare trip back to Mexico or Brazil to visit friends. Twenty hour flights overseas, like the shoveling of snow, also go unmissed. A former member of the Department of Chemical Engineering Advisory Board, he visited Blacksburg twice a year, with Radford University – where he met his wife – nearby.

Looking back on his career, Baduini said he is a “jack of all trades and master of none.” Except adapting to change, of course.
Kelso S. Baker

B.S., Civil Engineering, 1955

Kelso Baker, a Campbell County, Va., native, began his studies at Virginia Tech in 1947, graduating with a B.S. in Civil Engineering in 1951. He began his engineering career with the U.S. Army Corps of Engineers on a runway expansion project at Langley Air Force Base in Virginia.

Following a tour of duty with the U.S. Marine Corps, he took a job in Cambridge, Mass., with Badger Company, a world-wide firm involved in the design and construction of petroleum and chemical plants. Working initially as a project engineer and later as a construction superintendent, he was engaged primarily in projects in the eastern U.S. and Canada.

Mr. Baker moved to Pittsburgh, Pa., to accept a position as project engineer with Electromelt, a division of Magraw-Edison that designed, manufactured, and erected hot metal steel-making equipment. In 1963 he established his own firm — a manufacturer’s agency — that he continues to operate with offices in Pittsburgh, Charleston, W. Va., and Cleveland, Ohio. Baker Process Equipment Company, Inc., represents a number of companies that manufacture heat-transfer equipment, vacuum jet equipment, and analytical gas analyzers.

A registered Professional Engineer in the state of Louisiana, Mr. Baker is an active member of several professional engineering organizations, including the Engineering Society of Western Pennsylvania and the Instrument Society of America.

Mr. Baker has been actively involved with Virginia Tech for many years. He is a member of the university’s Ut Prosim Society and the College of Engineering’s Committee of 100, and he has established a scholarship endowment within the college. A generous CEE alumnus, he has provided valuable service and advice to the department during his tenure on the CEE Alumni Board.

In 1999, Mr. Baker made it possible for CEE to host the premier facility in the mid-Atlantic region for hydraulics research. The Kelso S. Baker Environmental Hydraulics Laboratory, directed by CEE Professor Panos Diplas, enables researchers to study phenomena related to the movement of water, sediment, and pollutants through wetlands and waterways. The lab also provides the means for modeling the behavior of stream flow during floods, simulating ecological aspects of channel flows, and developing measures to control scour around bridge piers and other structures.

The Baker Hydraulics Lab increases opportunities for interdisciplinary research in the field of hydraulics. In addition, the lab helps CEE to recruit top-quality graduate students and provide training for undergraduates in the critical areas of environmental and fluvial hydraulics. “Our faculty and students will reap significant benefits from the generosity that the Bakers have shown to our department,” CEE Department Head William Knocke said during the dedication of the facility.

Mr. Baker and his wife, Vera, reside in Sewickley, Pa., a suburb of Pittsburgh. They have a daughter, Deirdre Shannon Dunlop, and two grandsons, Dylan and Morgan.
Charles E. Bakis  
Engineering Mechanics, Class of 1984, MS  
Engineering Mechanics, Class of 1988, Ph.D.

“Growing up, my father was a dedicated ‘motor head’, buying, fixing up, and selling anything that ran on wheels,” said Charles “Chuck” Bakis. “Watching and helping my dad work, I too became interested in mechanics and learned it wasn’t about magic, but rather about the work.”

When he was 15 years old, the most celebrated velodrome in modern American cycling history became a second home to Bakis. The Trexlertown Velodrome, a 333-meter cycling track constructed from a cornfield, now known as the Valley Preferred Cycling Center, was located in Lehigh Valley and in close proximity to Bakis’ home. The track sponsored races for high schoolers and became a springboard for him to advance onto amateur racing.

In the classroom, Bakis felt the pressure of being a first generation to attend college and put his nose to the books.

Born in Allentown, Pennsylvania, one hour north of Philadelphia, Bakis grew up around both sets of grandparents. They had embarked on a new life when they moved from the old world of Greece in the early 1900s and knew what hard work was all about. His father's parents ran a shoe repair shop during the Great Depression and later turned to floral design. His mother's father was in the painting business.

As a youngster, Bakis was an extra hand around the family's flower shop and worked his way up the ranks sweeping floors, then selling potted petunias and hyacinths to customers around Easter and Mother's Day. When in high school, he was promoted to running the manual cash register, which meant ‘doing the math’ in his head. Eventually, he became a driver, delivering mostly to the outskirts of town because he knew these areas best, due to his cycling hobby.

But his parents considered his fascination with bicycles, motorcycles, and cars a hobby; they wanted more than a technical vocation for their son. During his tenth grade year in high school, Bakis’ neighbor and academic counselor also advocated for him to choose the college prep track.

“The die was cast. My days in high school were filled with numbers; calculus and trigonometry instead of grease and wrenches,” said Bakis, today a Distinguished Professor of Engineering Science and Mechanics.

Wanting to stay close to his family, Bakis and his sister ventured a short distance to local universities. Bakis accepted early admission to Lehigh University to study engineering. He enrolled in mechanical engineering, instead of pursing his initial inclination to become an auto mechanic, and naturally excelled.

A freshman at Lehigh University and a Category II cyclist racer, Bakis’ focus was strictly bicycles and books. During the week he’d ride alone and on weekends he was competing with professionals. He clocked 200 to 250 miles per week during the summer, and with snow tires, 150 miles per week in the winter months. Despite his love of the open road, his first priority was attending class and his studies.

In his senior year, Bakis weighed the idea of attending graduate school, while applying for jobs in the corporate realm.

“Of course, mechanical engineering was an easy choice for me. I liked it all and couldn’t seem to choose a specialization,” said Bakis of the many mechanical engineering disciplines. “I thought graduate school or practical experience would help me figure out the path to take.” He went as far as to take the GREs, the GMAT, as well as the Engineering and Training Exam, and applied to several graduate school programs.

In 1981 and with his bachelor’s degree in hand, the job market was thriving and RCA Corporation, the manufacturer of the first electronic turntable, offered Bakis a unique opportunity, which allowed new staff engineers to explore five different RCA divisions and then choose a permanent position within one. Bakis worked on applied research, satellites, television picture tubes, and radar systems in a series of five-week stints.

Bakis was captivated with design work on communications satellites and chose to work at the RCA Astro-Electronics Division in Hightstown, New Jersey, positioning communications hardware in the satellite to assure specific mass properties. Although it was interesting work at first, it became more mundane as time passed. Bakis noticed those around him with masters and doctoral degrees were working on the “fun stuff,” such as fiber-reinforced plastic, a new type of composite material in the aerospace field. And so he spent some time at the library and found Virginia Tech and the University of Delaware were two universities with faculty working on the research, design, testing, and analysis of these innovative materials. Ironically, much later in 2013, Bakis was elected as president of the American Society for Composites.

In August 1982, Bakis took a leave of absence from RCA and chose to pursue a master’s in engineering mechanics at Virginia Tech. He was so impressed with the caliber of the engineering program at Tech that in 1984, after obtaining his master’s, Bakis decided to stay on and further his education, giving up his position at RCA, earning his doctoral degree four years later.

Wayne Stinchcomb and Kenneth Reifsnider, both faculty members at the college, were advisors and mentors to Bakis. They were “perfect scholars and gentleman,” and demonstrated to him the “good life of being part of the college community,” Bakis recalled.
In 1988, upon completion of his academic education, Bakis interviewed for a few government research jobs, but accepted an assistant professor position in the College of Engineering at Penn State University.

Bakis immediately thrived in the academic environment, both in the teaching and research realms. Prior to his arrival at State College, a colleague, H. Thomas Hahn, had established a laboratory at Penn State for manufacturing composites. The facility allowed him the opportunity to produce and test specimens, a step up from his student days when he had to wait for samples to be delivered to the lab.

Today, Bakis’ work spans manufacturing, testing, and analysis. His research focuses on the development of lightweight composite materials, energy absorbing composites for crash-worthy vehicles, nano reinforced composites, and thermomechanical behavior and durability of composites used in civil construction.

As the co-principal investigator on the Graduate Automotive Technology Education Center, a program within the Vehicle and Safety Program at Penn State, Bakis and his students have designed and manufactured ultra-high speed composite flywheel energy storage systems for hybrid electric vehicles. He also chaired an American Institute of Aeronautics and Astronautics-sponsored task group to establish the first ever flywheel rotor safety and longevity standard, specifically the area of material test methods.

Another significant research area Bakis has put his mark on is flexible composites with adjustable shape and stiffness. With Defense Advanced Research Project Agency and National Science Foundation funding, he advised Mike Philen, then a doctoral candidate at Penn State. Together with their colleagues, they developed composites that could instantaneously change stiffness by a factor of 50.

“As a faculty member who was once a student, I greatly appreciate Dr. Bakis’ caring mentorship and advisement, positive attitude, professionalism, and commitment to excellence in his work,” said Philen who is now a Virginia Tech Associate Professor of Aerospace and Ocean Engineering.

Balancing his role as professor and researcher, Bakis has advised or co-advised 34 master’s students and 16 doctoral students; published over 140 refereed journal and conference papers; and has been the principal or co-principal investigator of 90 externally funded projects.

Bakis continues to be about the “work,” as he steadfastly remains a prominent fixture in the Engineering Science and Mechanics Department at Penn State and in professional organizations. Since 2003 he has served as the editor-in-chief of the American Society of Civil Engineers’ Journal for Composites Construction. In 2010, his peers recognized him with the Outstanding Research Award in the American Society for Composites. He is also a Fellow of the American Society for Composites, the American Society of Mechanical Engineers, and the International Institute for Fiber Reinforced Polymers in Construction. He co-chairs committees of the American Society for Testing and Materials and the American Concrete Institute dealing with the measurement of properties of composites used as reinforcements in concrete.

“Chuck is an outstanding ambassador for Virginia Tech. He has made significant research contributions to the application of composites in infrastructure applications, and impacted the profession through his work with the American Society for Composites, ASTM, and the Journal of Composites for Construction. I am proud to be able to count him among the alumni of the engineering mechanics program,” said Scott Case, professor, engineering science and mechanics program chair, and nominator of Bakis’ recommendation into Virginia Tech’s Academy of Engineering Excellence.
Jerry Ballengee grew up in the small rural paper mill town of Covington, Va., the youngest of nine children in his family. “It was a great place to grow up,” says Mr. Ballengee, now retired and living in Roanoke, Va. “I played football and basketball in high school. I played in the band, and was a member of the chorus and the A Cappella Choir. I performed in school musicals and just generally had a great time. You knew practically everybody in town and they all knew you.”

After graduating high school in 1955, Mr. Ballengee hired on at the local paper mill (then Westvaco Corporation; now MeadWestvaco) like many of his peers. “I had no interest in going to college back then. My Dad had had a massive stroke when I was in my sophomore year. He was paralyzed on his right side and never able to work again. My older siblings were all chipping in to help Mom and Dad, so I wanted to get a job and do my part,” he recalls. But after a few months working in the paper mill, the teenager decided to seek his fortune elsewhere and enlisted in the Air Force. He spent his service time in Texas, Mississippi and Japan. “I grew up in the military. They taught me self-reliance and the importance of personal responsibility. Those are life lessons,” says Mr. Ballengee.

Returning home in 1958, Mr. Ballengee went to see his favorite high school teacher, Miss Maude Mahaney. “She was a terrific math teacher and a terrific person!” He told her he had decided to become a math teacher, too. “She complimented me on finally coming to a decision that I needed to go to college, but then asked me if I planned to get married some day,” he says. He told her that he expected he would. In response, her advice was: “If you’re going to feed a family you’ll need more money than you can make as a high school teacher. Become an engineer like your big brother!” (Ballengee’s older brother, Jim, had won an appointment to the Naval Academy in 1953. But after a severe injury to one of his knees during his plebe summer training, he was given a medical discharge from the Navy. He then co-oped his way through Virginia Tech, working at Westvaco in Covington, receiving his chemical engineering degree in 1958.)

Mr. Ballengee enrolled at Virginia Tech in the winter quarter of 1959. “I needed to move through. I was already in my 20’s and felt like I was behind. I started in chemical engineering but after enduring the introduction to organic chemistry, which back then constituted the third quarter of freshman chemistry, I knew I had made the wrong choice. I switched to mechanical engineering. Later on I had a few classes with Prim Jones (today known as Mary Berry). Was she a godsend! She tutored more than a few of us struggling males through several courses. If it was
technical, she just had it,” Mr. Ballengee says of his only female classmate who is also a member of Virginia Tech’s Academy of Engineering Excellence.

Mr. Ballengee completed his degree requirements at the end of the winter quarter of 1962. Having done well academically and with his military service behind him, his job opportunities were “almost overwhelming.” He received a job offer after each interview, including ones from General Electric, Shell Oil, Schlumberger, Armstrong Cork, and others. But it was Westvaco Corporation that enticed him back into a pulp and paper mill.

“It was Westvaco’s approach that I liked. Instead of hiring for a specific job and career path, Westvaco said, ‘Come to work for us – either plant engineering or process engineering, your choice – and over the next several years we’ll figure out together what your career path ought to be,’” Mr. Ballengee says.

He went to work for Westvaco at its facility in North Charleston, S.C., as a process engineer. Within a year he was named a group leader of an interdisciplinary team in the process engineering department. A few years later he was transferred to Westvaco’s Industrial Packaging Plant in New Orleans as a plant engineer.

In 1966 Mr. Ballengee joined Champion International Inc., of Hamilton, Ohio. At that time it was primarily a manufacturer of coated and uncoated printing and writing papers. His early successes in managing the introduction of new, more cost effective paper coating components into existing product lines led to his selection as a member of the company’s team to design, construct, and start up a greenfield pulp and paper mill in Courtland, Ala., the first new mill the company had built since 1937.

“At age 28 with only four years of experience, this was an incredible opportunity! I learned so much from so many. It was a four-year project from the beginning of design to completion of start-up. In today’s dollars it was a billion and a half to two billion dollar project. Fortunately, the job was completed on schedule and within budget,” he says.

After completion of the Courtland Mill in 1970, Mr. Ballengee was moved back to corporate headquarters as Champion’s coated papers product manager in its business planning (marketing) department. This was an entirely new experience, completely foreign to engineering, and became the motivation for him to pursue some business education. He earned his MBA at Xavier University in Cincinnati, Ohio, in June of 1974.

Over the ensuing years with Champion and after the successful completion of the product manager’s assignment, Mr. Ballengee completed tours as mill manager at Canton, N.C.; project manager for the doubling of the Courtland Alabama Mill; and eventually became the vice president of corporate engineering relocating to Stamford, Conn.

Early in 1981 Mr. Ballengee was recruited by Union Camp Corporation, another forest products company headquartered in Wayne, N.J., to join the company as its vice president of corporate engineering. Union Camp was about to embark on the engineering and construction of a greenfield pulp and paper mill in Eastover, S.C., and they were quite anxious to have someone who had been through that experience to head their effort. Mr. Ballengee took on that responsibility and in the fall of 1984 Union Camp’s New Eastover Mill came on line, ahead of schedule and under budget.

Next came an assignment as senior vice president and general manager of the Kraft Paper and Board Division. In 1986 he became executive vice president of the packaging group that consisted of five divisions of the company (Kraft Paper & Board Division; Corrugated Container Division; Flexible Packaging Division; Folding Carton Division; and International Packaging Division) and was elected to the board of directors of Union Camp in 1987. In 1994 Mr. Ballengee became the president and chief operating officer of this Fortune 250 company.

In June of 1999 Union Camp was acquired by International Paper Company, the world’s largest forest products company. At that time Mr. Ballengee took early retirement and relocated from New Jersey to Roanoke where he currently resides. However, he has not left the business world entirely since then.

In late 2001 as the company emerged from bankruptcy, he assumed the chairmanship of Morris Material Handling Company in Milwaukee, an old line manufacturer of through-the-air, P&H brand, material handling equipment. Having returned the company to solid financial condition, the company was sold to a strategic buyer in April of 2006. He also is currently chairman of the board of CB&I Company, a NYSE listed, Dutch company providing engineering, procurement, fabrication and construction services primarily to the oil and gas industry. In May of 2008 CB&I ranked third on the Engineering News Record’s list of the top 20 Industrial Process/Petroleum Contractors and 12th on its list of The Top 400 Contractors. Mr. Ballengee has served on CB&I’s board since 1997.

Mr. Ballengee is married to the former Miriam (Miki) Zippin of New York City, whom he met as a widow with three young daughters in 1979. They were married in 1982. He has a son and a daughter from a previous marriage. All five children are college graduates, but as Mr. Ballengee says, “Alas, none of them went to Virginia Tech!”
Paul S. Barbery
Mining and Minerals Engineering
Class of 1959, BS

Paul Barbery was in his sophomore year at Virginia Tech when his attention was diverted to mining engineering from civil engineering. The West Virginia native had a deceased father and little money for his college education. He needed funding. As a freshman, Mr. Barbery worked as a co-operative student, with a job at Norfolk & Western Railway in its engineering department. Then a new opportunity came along.

“I explained my being a co-op student at Tech to a friend’s father, who was in the mining business. He convinced me I should become a mining engineer because that would offer me a scholarship,” Mr. Barbery says. “So, after receiving a scholarship award and a promise of a job in the mines during school vacation and holiday periods, I switched to become a mining engineer, which I’m glad I did.”

The giants of the U.S. coal industry are glad Mr. Barbery did, too. Eternally so.

With that choice, Mr. Barbery would start a career that would take him to Pittston Coal Group, A.T. Massey, American Metals and Coal International Inc., National King Coal, and Asian-American Coal. He helped build some of those powerhouses. But all that came after Mr. Barbery’s first trip down a hole in the earth.

Fifty years later the coal giant still recalls his first trip inside a mine in rural Leatherwood, Ky. “I was very happy to go in,” he says. “I wanted to learn, to see what it was all about.”

After graduating in 1959, Mr. Barbery was employed as an industrial engineer by Jewel Ridge Coal Co., which provided him with the initial scholarship. Within a year, Jewell Ridge laid off the unit’s higher management. But Mr. Barbery befriended and followed one of the luckier managers up the chain to a mining subsidiary of A.T. Massey in West Virginia. Soon he found himself being promoted to head of the industrial engineering department. It was here that Mr. Barbery’s interest diverged and flourished.

“I wanted to be a more rounded person, to have the liberal arts, or the legal side, in addition to the coal side of it,” Mr. Barbery says. So he decided to attend the University of Richmond’s T.C. Williams School of Law, working during breaks at a power company in Richmond, Va. Money was tight, but Mr. Barbery had been used to that. “Everyone was in the same economic situation,” he adds.

Mr. Barbery graduated from law school in 1964 and joined the firm of Martin Hopkins & Lemon in Roanoke. His stardom rocketed. He made partner in three years, not the normal five. He worked not just on coal-related projects, but on all legal matters. One of
Mr. Barbery has remained an active Virginia Tech alumnus despite the busy career and his moving to the northern suburbs of Charlotte, N.C. He was named a distinguished alumnus of the mining and minerals engineering department in 1990, and served on the department’s advisory board a decade later.

“When I met Paul, he was working at A.T. Massey Coal and at that point he had a tremendous reputation as a person who had a grasp of technical problems and legal issues,” says Michael Karmis, the Stonie Barker Professor of Mining and Minerals Engineering. “Having that combined understanding was extremely valuable.”

Mr. Barbery also started a scholarship program for graduate students within the department. Greg Adel, professor and department head of minerals and mining education, adds: “It’s nice because it is for our graduate students at the start of their career. It helps people who may be struggling at the beginning of their education, when they need the help. It’s more an award for potential.”

Mr. Barbery said the selected students have done well, with a recent recipient currently designing a methane-leak warning system for coal miners. He adds, “That’s never been done before.”

And Mr. Barbery well knows about doing things never that have been done before.
When Stonie Barker Jr., started his career, he never refused an assignment nor did he ever decline to go to an area he was needed, no matter how bad the conditions were. His philosophy paid off. He began his profession in mining as a deep-pit miner, and 19 years later he was the President of Island Creek Coal Company, the fourth largest producer of bituminous coal in the U.S. when he presided over the business.

For a man who would be described by Time magazine as a critical player in ending a three and a half month national coal strike in the winter of 1978, his adolescence, spent in a low-income area, never indicated he would become such a prominent leader in the energy arena. He was one of 29 students in his class at Chapman High School in West Virginia in the early 1940s. “You could stick under my thumbnail what I knew about math after graduating from high school,” the future engineering graduate recalls.

With World War II calling every able-bodied young American man, Mr. Barker enlisted in the U.S. Army in 1943, and he was sent to the South Pacific. He used the opportunity to enroll in math classes, but the courses still did not make up for his shortcomings. After the War ended he worked as a common laborer, and questioned how he was going to make a living.

He enrolled at West Virginia Tech, and when he told his counselor he wanted to study engineering, “the man just shook his head,” Mr. Barker says. The counselor advised him to go back to high school math classes, which he did during the summer of 1947. Later that summer, he accompanied a friend to Virginia Tech, and while he was on campus, he visited the Admissions Office. He summoned up his courage, and asked if he could enroll. The immediate response was, “Do you think you can just walk in here like it is a restaurant and order a sandwich?” Barker remembers vividly. Undaunted, he told the gatekeeper that he had been overseas in the military, and the atmosphere in the room changed immediately. He was on Virginia Tech’s roster that fall, using the GI Bill to pay for most of his expenses, leaving him with the sum of $132 a quarter, or $44 a month, to pay for his room, board, and tuition.

Steadfast in his intentions, the young man graduated in 1951 with a degree in mining engineering. His West Virginia roots led him to the only industry he knew might have opportunities for him. “Coal mining is a tough industry physically, but it had opportunities for educated people,” Mr. Barker, the former president of the student chapter of the Burkhardt Mining Society at Virginia Tech, says. He immediately joined Island Creek, which began its operations on
30,000 acres of land in Logan and Mingo Counties in West Virginia in 1902.

Mr. Barker started with the company’s training program, learning all the phases from safety to productivity. After six months with the industrial engineering department, he moved to operating management. During this time, he spent about six years underground. He recalls one of his most difficult assignments was when he accepted the supervisory role of a Breathitt County, Ky., coal mine that was about 30 inches high. Mr. Barker, a large man, had to crawl with his employees on his hands and knees through the mine. “No one wanted this job, but the company told me if I could make it profitable, I could write my own ticket,” he says. Within six months, the mine became profitable and Mr. Barker was named a superintendent.

Within 12 years of his graduation as a Hokie, Island Creek named Mr. Barker its vice president of operations. Seven years later he was president, and by 1972, the chief executive officer. In 1983 he was named chairman of the board. During his career with Island Creek, its coal production rate doubled, growing from 16 to 32 million tons annually. “I had good tutors,” he says, specifically citing the late Nick Camicia, a 1938 MinE graduate of Virginia Tech, as a person he relied on as a mentor.

Mr. Camicia, also a member of Virginia Tech’s Academy of Engineering Excellence, and Mr. Barker remained friends throughout their careers, even after Mr. Camicia left to preside over a competitor, Pittston Coal Company. The camaraderie between them was a key factor in dealing with the strikes by the United Mine Workers (UMW) union in the 1970s. A particularly onerous one that lasted through the winter of 1978 had the Bituminous Coal Operators’ Association (BCOA) at odds with the UMW led by the reformist Arnold Miller. When the BCOA, of which Mr. Barker was chair at the time, and the UMW could not reach a settlement, Mr. Barker suggested to Mr. Camicia that they speak directly to the UMW representatives, and not use the mediators. As both had spent many years in deep pit mines, they were able to remove the logjam between the groups, and had a deal within 24 hours.

“The UMW saw we did not have horns. They knew who we were. They spent a lot of time talking about the hard line approach the previous negotiators, the lawyers, had taken. They were glad that somebody was working with them who understood what mining was all about,” Mr. Barker said in an interview with his alma mater after the negotiations in 1978. And today, he still feels good about that satisfying time in his career. “Labor was tough, and they would strike at the drop of a hat. It was most rewarding to turn that around.” He was named chair of the BCOA following the settlement in 1978.

Today, Mr. Barker, named the Coal Man of the Year in 1985, predicts the coal industry still has a good future, but it must learn how to burn it cleanly and not pollute the atmosphere. “This country can’t do without coal ... The country will demand it, use it, and do it cleanly. We are making headway,” the chair of the National Coal Association from 1982-84, says.

Retired in 1984 from Island Creek, Mr. Barker now divides his time between his homes in Hendersonville, N.C., 22 miles south of Asheville near the Blue Ridge Mountains, and Naples, Fla., along the state’s Paradise Coastline. After his first wife died in 1998 after 47 years of marriage, he wed for a second time in 2003. He and his wife, Dorothy, enjoy playing golf together, and spending time with their children and grandchildren.

As a parent, Mr. Barker spent hundreds of volunteer hours with the Boy and Girl Scouts of America, and continued supporting them after he retired. In his own youth, he never had the luxury to become a scout as he spent his spare time earning extra money. But he made sure his son, Douglas, and daughter, Beverly, had the opportunity. Mr. Barker helped raise enough money for the local troops in Logan County that they were able to erect a winterized troop house that he predicts will be there “for 100 years.”

Mr. Barker is a member of the Virginia Tech College of Engineering Committee of 100 and he funded the Stonie Barker Professorship of Mining and Minerals Engineering (MinE), held by Michael Karmis, MinE professor and director of the Virginia Center for Coal and Energy research, an interdisciplinary facility for the state. Two of VCCER’s focuses are clean coal technology and carbon sequestration research.
Unknown to most citizens, the U.S. maintains a Space Catalog, a directory of approximately 13,000 known objects that now orbit the earth. “The importance of this catalog, especially to the nation’s defense, cannot be underestimated,” says William N. Barker, a 1965 engineering mechanics graduate of Virginia Tech. He and his team of engineers are responsible for many of the innovations leading to improvements of the catalog accuracy.

For example, he and his team created the Astrodynamics Support Workstation, a computer system supporting the constant, timely, and accurate information on the position of each and every cataloged object in space. The workstation software consists of approximately one million lines of program code, and it is the first system to routinely maintain the entire Space Catalog using numerical techniques. Cataloged objects are updated three times each day and the workstation is manned twenty-four hours a day and seven days a week.

Barker, a 40-year veteran of the field of applied astrodynamics, says “I fell into my career, a childhood dream.” As the son of a construction superintendent who was “always good at making things work,” the young Barker filled his days with reading science fiction books and building and flying model airplanes. “My father taught me tenacity and the importance of doing a job well. He inspired me. Although not formally trained, he is the best engineer I’ve known,” says Barker. After graduating from Handley High School in Winchester, Va., he spent a year at Randolph Macon Military Academy. An influential physics professor at the academy sold him on attending Virginia Tech.

After arriving in Blacksburg, he “fell in love with engineering mechanics. I became well grounded in statics and dynamics,” says the accomplished engineer. At the same time, he was a proficient member of the Corps of Cadets, achieving the rank of Lieutenant Colonel and Commander of its First Air Force Group. He was a member of the Corps’ Pershing Rifles Precision Drill Team, later called the Gregory Guard. “The Corps of Cadets taught me self-confidence and the leadership skills necessary to manage the difficult and complex technical projects I have been associated with,” Barker reflects.

Upon his graduation in 1965, Barker spent four years with the Air Force, flying jets for the first 12 months. He then began his work of keeping track of satellites in orbit for the Air Force Cheyenne Mountain Complex Space Defense Center in Colorado Springs, Colo. He was among the first of the young Air Force officers in the late 1960s to start determining when and where decaying objects would fall out of orbit and return to the earth.

Barker laughs as he recalls the computer systems and the ancient computer cards that were used as he started work on
cataloging space objects. “I have more computing power in my home today than all of Cheyenne Mountain had back in the 1960s.”

When Barker left military service in 1969, he spent one year with the Philco-Ford Corp., developing a new, more efficient method of maintaining the Air Force Space Catalog. After this, he entered the U.S. Civil Service and for the next 15 years Barker was a project leader for the Directorate of Astro dynamics at Headquarters Air Force Space Command.

During this time, Barker was involved in directly supporting Air Force Space Command on nearly every important and potentially dangerous satellite reentry, including NASA’s Skylab, the MIR space station, and MARS-96 spacecraft. When NASA decided to abandon Skylab, its first space station, “a lot of fear was sparked,” Barker recalls. The reentry would break the station into large surviving pieces that could be dangerous as they hit the ground. “NASA saved enough electrical power to use onboard gyroscopes to control the attitude of Skylab in case predictions showed it re-entering over a populated area.” Sure enough, this became necessary as predictions showed a possible reentry of Skylab into the eastern seaboard of the U.S. Consequently, NASA, armed with data from the Air Force team that included Barker, spun up the gyroscopes, changed Skylab’s attitude thus extending its trajectory. As a result, most of the debris then fell harmlessly into the Outback area of Australia. “According to witnesses, it was quite a fireworks show,” Barker says about the happy ending.

From 1985 through 1987 Barker, employed by Teledyne Brown Engineering, developed a PC based satellite tracking program, SATRAK, that achieved worldwide use by the Air Force and Department of Defense. From 1987 until 1998, he led the development of several new capabilities for the Air Force Space Command as the senior astrodynamics engineer for Kaman Sciences Corp. One was a workstation capability designed for space launch collision avoidance that successfully supported NASA’s Cassini interplanetary mission to Saturn. He also developed a new capability for calibrating the Air Force Space Surveillance Network radar and optical sensors.

In 1998, he joined ITT Industries Systems as a senior scientist, still working on improving the accuracy of the Space Catalog. From 1999 until 2002 Barker led an Air Force and NASA sponsored initiative to improve atmospheric density modeling for satellites experiencing significant atmospheric drag. The initiative resulted in improved orbit determination and prediction accuracy for near earth objects. “This development was important for manned space flight collision avoidance protection since the International Space Station (ISS) and the Space Shuttle reside at these altitudes,” Barker explains.

For the past six years, Barker has served as the chief scientist for astrodynamics for OMITRON, Inc. In this position, he is responsible for the continued improvement of the accuracy of the Space Catalog. He also supports the Air Force Collision Assessment missions for the ISS, the Space Shuttle, NASA’s robotics scientific satellites, and other critical U.S. satellite assets. In 2003 he headed a contractor team that attempted to determine if the Shuttle Columbia disaster could have been caused by a collision with space debris while in orbit. Findings were inconclusive but the “sensors we use aren’t sensitive enough to track the really small pieces of debris that might be the size of a golf ball or less,” he explains. “However, that’s a big issue as a golf ball-sized object can do enormous damage if it hit the ISS or the Space Shuttle at orbital speeds. It’s like a Mack truck hitting you on the Interstate.”

“The defense contracting business is very volatile, and it is unusual to remain in the same field very long, but I have a niche,” Barker says. Even though the Air Force may soon move its Space Mission out of Colorado, Barker’s group will remain together and continue to support the maintenance and improvement of the Space Catalog. The most likely scenario is that beginning in 2007, the Astrodynamics Support Workstation software will be rehosted on different machines, new capabilities will be added, and it will take two to three years to manage the change.

Barker says he might retire when this project is finished, but he may have to talk his wife Nancy into doing the same. She has been honored in her job as the number one Transaction Coordinator for a state wide title insurance company three times in the last six years. But since she shares his avid golfing interest, he has hope.

Barker has one daughter, Crista, who along with her husband resides in Colorado Springs.
R. Sidney Barrett, Jr.
Mechanical Engineering, 1962

York County attracted approximately $140 million worth of non-residential development between 1990 and 1999, when R. Sidney Barrett, Jr. served as the Chairman of the Industrial Development Authority (IDA). Almost 2.5 million square feet of commercial and industrial space was built in the county during the 1990s. The county’s commercial tax revenues increased by 160 percent, from $10.4 million in 1990 to $27.1 million in 1998.

When Sid stepped down from his chairmanship in 1999, he was personally commended for much of this success, including the issuing of $136 million in industrial revenue bonds for the construction of 21 industrial and commercial projects in York County. He was also lauded for “the creation of a unique public/private partnership to develop the county’s largest industrial park.” His leadership was cited for contributing “directly to the construction of more than two million square feet of commercial and industrial development” for York County, a 27-mile area from Williamsburg to Hampton, Va. When Sid left his volunteer position with IDA after 20 years of service, he was presented the title of Chairman Emeritus.

Sid’s overall success in attracting business to his community as well as in founding his own personal business was a huge jump from his humble beginnings. Raised on a farm near Franklin, Va., he attended the now defunct Carsville High School where all 12 grades were in one building. His 1950 high school graduating class of 18 was the largest in the school’s history at that time. But its smallness did not reflect its progressiveness. “We had the first woman principal in the state of Virginia, and she taught me to paddle my own canoe,” Sid recalls.

After high school, Sid worked at a local paper mill for three years. In 1953 he entered the Apprentice School at Newport News Shipbuilding and Dry Dock Company, first as a machinist apprentice and later in the machinery design division. In 1957 he was awarded one of its two annual Ferguson Merit Scholarships to study engineering, and he elected to attend Virginia Tech. The highly competitive scholarships were based on academic and craftsmanship grades and on recommendations from instructors in the Apprentice School where some 500 students were employed. He entered Virginia Tech in the fall of 1957 as a freshman in mechanical engineering.

Sid made the most of his college education, involved in extracurricular activities ranging from the Glee Club to director of the photography staff of the student publications board. He served as president of the Civilian Student Body during his senior year and on the Athletic Association’s Board of Directors. He was inducted into Omicron Delta Kappa, Tau Beta Pi, Pi Tau Sigma, Pi Delta Epsilon, Kappa Theta Epsilon, and Who’s Who Among Students in American Universities and Colleges. He was a member of the American Association of Mechanical Engineers, the Cooperative Engineering Society, and the German Club. He graduated in 1962 after completing the co-op program with Newport News Shipbuilding.

After graduation he returned to Newport News Shipbuilding as a test engineer in its weapons systems test group. He was assigned to the launcher group of the Polaris submarine’s missile program, and worked on many sea trials for several submarines. In 1964 he was named Assistant to the Director of Education and Training, and served as Director of Supervisory Management Development, responsible for the company’s management training program. Sid taught many of the courses on management and leadership skills to several hundred employees of the shipyard. During this time he was also enrolled in the MBA program at The College of William and Mary.

Before he finished his MBA program, Sid and another Virginia Tech graduate, L.E. (Buddy) Hoffman, an industrial engineer, decided to leave the shipyard in 1967 and start an equipment rental business in Hampton, Va. They started as a franchise business and about two years later went independent and operated under the name E-Z Rental Center. Over the next 19 years, they built their operations to include five locations in the Peninsula area. Their business was soon rated in the top 10 percent of general tool rental businesses, based on volume, in the country. In 1972 they started B&H Enterprises, a partnership venture to build and manage commercial property.

In 1986, when Sid was 53, Stanley Tool Works bought the rental business. It was a little earlier than they had planned, but “when the price is right, you have to make the move,” Sid smiles. In 2001, the last buildings owned by B&H were sold, and it was time to retire from the business world.

Sid remains very active in his church, St. Luke’s United Methodist, and as one might suspect, is involved mostly in the financial programs of the church. He has chaired its Board of Trustees and the Finance Committee, was vice-chair of the Administrative Board, and now serves as assistant treasurer. He spends his “free time” pursuing his hobbies of furniture building, gardening, photography, and traveling. Some of those travels are to the Hokie football games.

Sid and his wife Carole are members of Virginia Tech’s Ut Prosim Society, the Legacy Society, and the College of Engineering’s Committee of 100. Recalling his own scholarship that allowed him to attend college, he and Carole have established a scholarship trust fund for engineering at Virginia Tech. “I have always felt that people who work hard deserve to be rewarded,” Sid says.

He and Carole, a mathematics graduate of the College of William and Mary who worked at NASA Langley, have two sons, Terry and Robert. Terry graduated from James Madison University with a degree in finance and marketing, and earned an MBA from the University of Richmond. He now works in Raleigh, N.C. in banking and real estate development. Rob graduated in electrical engineering and physics from the University of Washington at St. Louis, and then obtained his doctorate in applied physics from Stanford University. He is a research staff member with IBM and is currently pursuing a second doctorate in theology at Durham University in England.
Mary Berry

B.S., Mechanical Engineering, 1962

Mary Virginia Berry (formerly Jones) has a record of attaining “firsts” for women engineers and her pioneering career represents the epitome of a lifetime of achievements. Her induction into the Virginia Tech College of Engineering Academy of Engineering Excellence is one more example.

For many years, her allegiance to her alma mater came at a time when she was truly the only active alumna who served as a role model to Virginia Tech’s female engineering students who aspired to become professional engineers. In 1998 the Society of Women Engineers awarded her the rank of Fellow for her contributions to women in engineering. She is routinely selected as a spokesperson on propulsion systems, engineering education, and women in the technical workforce.

Ms. Berry’s career spans more than four decades with Atlantic Research Corporation (ARC) where she started as a structural engineer. Recently the company merged with Aerojet General Corporation and Ms. Berry was named the Executive Director of Virginia Engineering. For ARC, she had served as Director of Design Engineering, Configuration Management and Knowledge Resources.

Ms. Berry’s technical achievements are admirable. Her expertise is in solid propellant rocket motor design. During the early part of her career, she conducted structural and thermal analysis of metal and plastics parts and solid propellant, as well as the mechanical design of hardware. She devoted part of her career as the Chief Engineer on the Multiple Launch Rocket System (MLRS). ARC subsequently produced more than 500,000 systems that created millions in revenues. In her role as the lead technical person for the projects, she headed the development of the process and design for molding motor nozzle from a thermosetting plastic that reduced the cost of the part by 90 percent.

Ms. Berry has dedicated her career to improving engineering in a defense-oriented industry. She has spent her professional life in a male-dominated field, and her contributions in the technical arena allowed her to move to management positions within ARC. Because of her direct experience in design engineering, she was able to bridge the gap between the technical needs and programmatic concerns that arise in a manufacturing environment, particularly in the areas of design integrity and verification versus cost and schedule. When Ms. Berry moved into management, she was the first and remains the only woman at ARC to have held a director of engineering position. In 1992 the Society of Women Engineers gave her the Upward Mobility Award in recognition of her advancement in the engineering industry. Her peers regarded Ms. Berry as the definitive expert on the engineering development of the rocket motors for the Multiple Launch Rocket Motor. During the time Ms. Berry was the chief engineer on this program, she achieved an 18 percent reduction in the cost of production of MLRS. The U.S. Army has made several commendations on the MLRS, all attesting to the robust design and high quality of the product. She also served as ARC’s Chief Design Engineer on the Tomahawk MK-106 Booster and the Army Stinger rocket motors.

“I don’t know of another company whose chief design engineer — the head of rocket motor design — is a woman. And she is a woman who worked her way up through the ranks of this business,” said Antonio L. Savoca in 1990 when he served as President and CEO of ARC.

In 1993 Ms. Berry’s technical expertise was highly complimented by the National Research Council of the National Academy of Science and the National Academy of Engineering. She, along with a number of CEOs of Fortune 500 companies, was named to one of its national committees: the Advanced Space Technology of the Aeronautics and Space Engineering Board.

In terms of career “firsts” as a woman, Mary Virginia Berry holds many distinctions. She was the first woman registered as a Professional Engineer by the Commonwealth of Virginia. This affiliation occurred five years after her graduation from Virginia Tech, Mechanical Engineering Class of 1962. (She was the only woman in her class.) She was the first woman appointed to the State Board of Engineers, Land Surveyors, and Landscape Architects, a position she held from 1984-88. She was the first woman engineer appointed by a Virginia Governor to serve on the Virginia Tech Board of Visitors, 1984-88. She was the first woman to receive her alma mater’s highest honor, the Distinguished Alumni Achievement Award. Until about 12 years ago, she was the only woman to have served on the Virginia Tech College of Engineering’s Advisory Board. (She also chaired this board.) She was also the first woman to receive the College of Engineering’s Distinguished Service Award. During National Engineers’ Week in 2002 the District of Columbia Council of Engineering and Architectural Societies awarded her the “Engineer of the Year” award.

“I hope that I will always be able to serve Virginia Tech. If Tech had not admitted women in engineering, I certainly would not have had the wonderful career that I have experienced. When I started engineering, Virginia Tech had the only College of Engineering in the Commonwealth that would admit women. It was not until Title IX that the other engineering schools were forced to offer equal opportunities to women. I will always be grateful for the opportunity,” Ms. Berry says.

Ms. Berry and her husband Dallas reside in Gainesville, Va.
Richmond native William E. (“Ping”) Betts, Jr., lettered in varsity football at Virginia Tech and graduated first in his engineering class in 1932. As an undergraduate, he was elected to Phi Kappa Phi and Tau Beta Pi and was a member of the German Club and the Monogram Club.

After earning his M.S. in structural engineering at Virginia Tech in 1933, Mr. Betts became a Registered Architect in 1934. In 1938 in Lynchburg, Virginia, he and his friend A.P. Montague, Jr., founded Montague-Betts Company, a structural steel fabricator of several major construction projects including New York’s World Trade Center. Mr. Betts became Chairman of the company in 1956 and has remained in the position since that time.

During World War II, Mr. Betts was an officer in the U.S. Army Corps of Engineers, attaining the rank of Captain while serving in the European Theater. He was among the troops that landed on Omaha Beach during the Allied invasion of Europe at Normandy, France, and was awarded both the Bronze Star and the Croix de Guerre.

He has served as a director on several professional boards including those of the American Institute of Steel Construction, Virginia-Carolinas Fabricators Association, National Association of Manufacturers, United States Business and Industrial Council, Central Virginia Industries, and United Virginia Bank/Crestar.

Mr. Betts has been an active civic leader, serving on the boards of the Lynchburg Chamber of Commerce, Lynchburg Area Development Corporation, and Bedford County Public Service Authority. He has been the Director of the Lynchburg area United Givers Fund (United Way) and of the Lynchburg Fine Arts Center, was a founder and the first President of the Piedmont Club, and is a life director of the Boonesboro Country Club. A member of St. John’s Episcopal Church, he has served on the church’s vestry.

In service to education, he is a life trustee of Lynchburg College and of the Virginia Foundation for Independent Colleges, and a past member of the board of the Virginia Episcopal School and of the President’s Committee of Randolph-Macon Woman’s College.

Also active on behalf of his alma mater, Mr. Betts is a past Director of the Virginia Tech Educational Foundation and a former member of the university’s Alumni Association Board. He is a charter member of the Rowe Fellow Program, and currently is a member of the Ut Prosim Society and the College of Engineering Committee of 100. He also is on the Virginia Tech President’s Council Membership Committee for Lynchburg and served on the Lynchburg-Amherst-Nelson Regional Capital Campaign Committee. In 1975 the university recognized his efforts by presenting Mr. Betts with the Virginia Tech Alumni Association Distinguished Service Award, and in 1983 he received the College of Engineering Distinguished Alumni Award. In 1984 Mr. Betts endowed the Montague-Betts Professorship in Civil Engineering at Virginia Tech, a position held since that time by Dr. Thomas Murray, an expert in the field of structural steel research and design. Mr. Betts has also been honored for his lifetime achievements by the civil and environmental engineering department; in 1998, it awarded him membership in its Academy of Distinguished Alumni.

Mr. Betts and his late wife, Eloise, have two sons, one daughter, nine grandchildren, and two great-grandchildren.
Charles P. Blankenship
Metallurgical Engineering; BS, 1960
Metallurgical Engineering; MS, 1962

When Charles Blankenship graduated from Virginia Tech in 1960 with his bachelor’s degree, he had played end for the football team under Coach Frank Moseley, been inducted into Tau Beta Pi, the engineering honorary society, and excelled as the Athletic Commander in the Corps of Cadets. Those were just a few of his college highlights.

Blankenship came to Virginia Tech as a star athlete from his high school in Bluefield, W.Va. As a teenager, he raced from the football field to the basketball arena to running track, depending on the season. And he took his academics seriously, excelling in his high school chemistry and math classes.

When he arrived at Virginia Tech on a full football athletic scholarship, he discovered that being an athlete and an engineer “was tough. It was a lot of work. But being on a team helps you understand that it is the team that succeeds” and not just an individual, Blankenship says. “I also learned that you have to understand the tasks, not just assign them” which he later applied throughout his highly successful 35 year career with NASA.

At 18, he selected the career of metallurgical engineering after meeting the 1956 department head, John Eckel. “Dr. Eckel attracted me to the field of metallurgy because he made it sound like fun, and because he told me about all of the available opportunities,” Blankenship recalls. Again, he would surpass many of his contemporary colleagues, evidenced by Eckel’s offer to Blankenship of a graduate fellowship after his senior year.

Following the receipt of his master’s in 1962, Blankenship completed his commitment to the Air Force for the next three years. The military “loaned” him to NASA during that time, and he started at the Lewis Research Center in Cleveland, Ohio. While NASA was most prominently known at that time for its goal of getting a man on the moon before the end of the 1960s, Blankenship found himself working on even more futuristic projects. “I was investigating the next generation of launch materials to go to Mars. And I was looking at a tungsten material for nuclear rockets, almost 40 years ahead of its time,” the materials engineer says.

By 1968, he was leading an effort to develop an alternative thermal protection system for the Space Shuttle, a vehicle that would not be launched until 1981. While he and his team were investigating an all-metal heat shield, others at NASA were exploring the use of ceramic tiles. “The tiles turned out to be the best system for the weight requirements, but we ended up developing a new alloy with commercial applications and a new way of manufacturing it,” Blankenship recalls.

As the country moved into an energy crisis in the early 1970s, the U.S. Department of Energy requested NASA to
conduct a study to explore the feasibility of all-ceramic, gas turbine engines for cars. Blankenship was given the project, and although he and his team showed that ceramic engines would work, they remained cost prohibitive.

As his expertise gained prominence, Blankenship was named the head of NASA’s Materials Applications Branch in 1974, and worked on nickel-based alloy materials for aircraft engines. This successful project allowed the application of some new materials into commercial use, the beginning of Blankenship’s much exhibited prowess in technology transfer.

In 1980, Blankenship moved to NASA’s Langley Research Center in Hampton, Va. Within three years he was named the Director for Structures, and led the center’s research and technology development programs for aerospace materials, structures, and acoustics. He managed four research divisions and a staff of 275 scientists and engineers. His responsibility included planning and implementing joint government-industry-academic research and technology programs that led to significant advances in key aircraft and spacecraft systems. Among these were the demonstration of high performance composites in commercial aircraft structures, the first assembly of large structures in space, and industry validated methods for predicting and reducing aircraft noise.

During this time Blankenship served as a principal member of the National Structures Oversight Team preparing for the Space Shuttle’s return to flight after the Challenger disaster. “This was about a three year effort. After the failure of the O-ring, we looked at all concepts for sealing joints, including a redundant system. We examined and validated the structural integrity of the entire rocket-motor propulsion system,” Blankenship recalls.

In 1994 he moved to Marshall Space Flight Center in Huntsville, Ala., to serve as its Deputy Director. He led the development of the super lightweight, external tank for the Space Shuttle. This development increased the shuttle payload by 8000 pounds as required for the Space Station.

Later in 1994 he returned to Langley as its Director of Technology Applications. For two years, he led the Center’s technology commercialization program that included patenting, licensing and marketing of new technologies to the non-aerospace sector. “We commercialized two instrumentation methods for non-destructive testing of materials and structures and licensed three new polymeric materials. They included adhesives for electronic cable systems, film for structures and licensed three new polymeric materials. They included oxygen resistance (for space applications), high temperature foams, and an ultrasonic device for crack detection in metallic structures,” Blankenship explains.

“It was very tough to try and find the commercial applications,” Blankenship adds. “We were developing technology for spacecraft, and then we were trying to find potential commercial applications. It was like having a solution and then looking for a problem,” he adds. “And the companies would then have to take the risk for further development and applica-
Dr. Charles Blankenship, Jr.
Materials Science and Engineering
Class of 1988, BS

Each time Charles “Chip” Blankenship Jr., receives a promotion at General Electric, his responsibility increases by a few billion dollars. Yes, that is billions.

Currently, the graduate of Virginia Tech Materials Science and Engineering (MSE) Department is the President and Chief Executive Officer of GE Appliances and Lighting, an $8 billion a year business. He quipped that he still “sleeps well because he has short nights.”

Prior to this round-the-clock position, he spent time on GE’s aircraft side, leading its $5 billion annual business in GE’s Aviation, Commercial Engines group from 2008 until 2012. That was a step up from his 2002 assignment to assume international responsibilities for its $1 billion regional jet business. That same year GE assigned him its executive liaison role with his alma mater Virginia Tech.

From birth, Blankenship seemed destined to be a Hokie. His father, Charles Blankenship, is a 1960 and a 1962 MSE distinguished alumnus. His aunt and uncle earned graduate degrees in Virginia Tech’s Chemistry Department, and his family spent some 25 years vacationing annually at nearby Claytor Lake.

Chip grew up in a household where his mother, also a chemist, had hung the Periodic Table in the kitchen, and he would be subjected to quizzes over breakfast before he left each day for Poquoson High School in the Hampton Roads area of Virginia.

“Academics were highly valued in our household,” Blankenship said today. Although team sports were also encouraged, and he did play quarterback through his high school years, getting a “B” in physical education was okay with his parents. But he was expected to excel in chemistry.

His academic proficiency resulted in the Air Force Academy offering him a full scholarship. Virginia Tech, a state school, also wanted Blankenship, but did not offer any financial package. Noting his son was in a quandary, his father weighed in to help him make the decision by asking a single question, “Do you want a career in the military?” When his son responded, “Not really...I just want to fly and serve the obligation,” then his parents nudged him towards Virginia Tech.

Blankenship knew the College of Engineering was renowned for its materials program, although his freshman adviser Frank Marvin remarked that he was the first student to show up and claim MSE as his first choice without consultation. As an undergraduate researcher he worked for Larry Taylor of the chemistry department; his research was part of the interdisciplinary materials groups that crossed the boundaries of chemistry and engineering.

Research with Taylor helped Blankenship secure a co-operative education experience with Martin Marietta Laboratories after his freshman year. At the aerospace company, he worked with a host of Ph.D.s and said he “learned as much there as he did in school.”

For fun, exercise and spending money, he took a second job while on co-op as an ice skating teacher for pair performance training. “and the hourly wage was the same as a research scientist,” Blankenship reported. His proclivity for skating started as a four-year-old, and it appeared he had a natural talent for the sport, even training at Lake Placid, a former Olympic site, and playing competitive ice hockey. But when his parents moved to the more balmy climate of the Tidewater area of Virginia, skating disappeared from his hobbies until his co-op job brought him to Baltimore.

In 1988 Blankenship received his baccalaureate degree and a marriage license. He and his wife Belinda, a graduate of William and Mary, quickly moved to Pittsburgh, Pa., where he had accepted an offer from Carnegie Mellon to work with its Dean of Engineering on a research project while he pursued his doctorate. Fate changed these plans as his adviser left to take a job with, ironically, GE Aircraft Engines.

With this wrench thrown into his plans, a few conversations took place between Chip, his father and Ed Starke, also a Virginia Tech engineering graduate, who was then the Dean of Engineering at the University of Virginia. The result was Blankenship transferred from Carnegie Mellon to UVA, and worked with Starke on aluminum lithium alloys, an alloy system that became instrumental for the second generation of the space shuttle’s external tank.

Once Blankenship received his doctorate in 1992, he was a sought after commodity, with offers from such global companies as Boeing, Alcoa, McDonnell Douglas, and GE. “I chose GE because of the variety of technical challenges. I could work on everything from tungsten filaments for light bulbs to Ni-base superalloys for gas turbines,” Blankenship explained.

Blankenship began his career as a staff scientist at GE’s Corporate Research and Development facility in Schenectady, N.Y., where he recalled experiencing “a lot of long cold winters.” He worked on super alloy turbine disks for aircraft engines, making them more efficient with a higher temperature capability.

When he became a program manager in 1994, he led a team of scientists and engineers developing alloys and processes for aircraft engine, land-based gas turbine, lighting systems, medical systems and diesel engine applications. His technical work resulted in 23 papers published in refereed journals and eight U.S. and European patents.

In 1996, he transferred to Aircraft Engines business in Cincinnati and held a number of technical and product management roles. One project in particular...
was exceptionally memorable to him. He was put in charge of the Embraer CF34 programs, creating a new 70 to 100-passenger jet. He admitted he found it to be a “bit of a challenge,” but he was eager to meet the goal – bringing a family of four airplanes to the commercial airline market. For three years, he split time between Cincinnati and Brazil where the project was taking place. In addition to his technical and business responsibilities, he also had to learn the language and the culture. His team’s success was validated last year when Embraer and GE celebrated the delivery of the 1000th airplane to Republic Airways.

In 2002 Blankenship assumed responsibility for all of GE’s regional jet business, and this position represented his first $1 billion fiscal responsibility. Throughout this time when he worked with GE’s aircraft groups, Blankenship had the added expertise of being a licensed pilot. And when he flew commercially on Delta, he knew he was on a plane carrying one of his engines. He may have declined the Air Force Academy offer, but aviation consumed his life for many years.

In 2006, Blankenship was reassigned to a larger role with GE, serving as the general manager for GE Aero Energy, a $2.5 billion business, which manufactures and services gas turbine generator sets for power generation, pipeline and commercial marine applications. In 2008, Blankenship landed his first vice-presidency with the company, in charge of GE Aviation’s Commercial Engines group, a $5 billion annual revenue business.

Four years later, the executive was moved to the appliance side of GE as its President and CEO. In 2013 GE added to his title, naming him President and CEO of GE Appliances and Lighting, with revenues now coming in at $8 billion a year.

For Blankenship, GE has always “provided new and bigger challenges….The challenges bring a steep part to the learning curves.” For more than two decades he has averaged 60 to 70 hour work weeks, leaving his remaining precious time to spend with his family that includes four boys, ranging in age from nine to 19. “Work and family is a full deck,” he admitted.

When Blankenship is able to exercise, often in the form of swimming or crossfit training, he tries to include his sons in the activity. Similarly, they all enjoy family skeet shooting competitions and bird hunting.

His oldest son is enrolled at Indiana University where he is studying acting. However, he might have a Hokie left in one of the remaining offspring. As GE’s liaison to Virginia Tech, he has ample opportunities to be persuasive. For example, this year he brought his youngest son to the GE Leadership Essentials Conference that GE hosts for select engineering students each year. He has served on both the MSE and the College of Engineering Advisory Boards, improving MSE’s senior design experience, bringing the VT FIRE Building to fruition, and creating the Materials Characterization Laboratory with the Institute for Critical Technology and Applied Science.

At the college level, he was part of the team that worked on securing support for the Signature Engineering Building.

His legacy at Virginia Tech was already well established before his induction into the Academy of Engineering Excellence. And it marks the first time that a father and his son are both members, as Chip’s father was inducted in 2007. His academic father (Ph.D. advisor) Ed Starke, was also inducted in 2008. The legacy may actually be a dynasty.
John W. (Jack) Boyd
Aerospace Engineering
Class of 1942, BS

John W. Boyd has had the type of career that makes most engineers – and journalists, Hollywood actors, and any number of people – wag their tongues. He has rubbed elbows and directly worked with John Glenn, Neil Armstrong and Wally Schirra. Without his efforts and those of his co-workers, the United States would not have made it into space or to the moon, or beyond. When the Russians launched Sputnik in 1957, much of America panicked. Mr. Boyd and his fellow workers within the U.S. space industry set to work.

His awards are enviable: the Stanford Sloan Fellowship, the NASA Exceptional Service Award, the NASA Outstanding Leadership Award, the Presidential rank of Meritorious Executive, the NASA Distinguished Service Medal, and the Army Command Medal. He is a member of the NASA Ames Hall of Fame and a Fellow of American Institute of Aeronautics and Astronautics. “Jack enjoys a widely known reputation as ‘Mr. Conical Camber’ for his contributions to the theories of efficient high-performance transonic wings. He also has a well-established reputation as a devoted mentor to young engineers throughout his career,” says Chris Hall, head of Virginia Tech’s aerospace and ocean engineering (AOE) department.

Mr. Boyd was raised in Danville, Va., and was not inclined to study engineering until, as a young teen, his older cousin invited Jack for a ride-along in a biplane. Up in the air, the wheels on the young Boyd’s mind were set to spinning. “Why does it stay in the air for Christ sake,” he asked himself of the airplane. Mr. Boyd’s interest in flight landed him, so to speak, at Virginia Tech as World War II was churning onward. At the time, students were pushed through college – quarter semesters and the like being placed aside. He graduated at age 21 with a degree in aeronautical engineering and, having never ventured far out of Virginia, sought a job at the federal Ames Aeronautical Laboratory in Mountain View, Calif. The job paid a bit less than $3,000 per year, and the other option was Langley in Hampton, Va. “I wanted to experience life beyond Virginia,” Mr. Boyd says of his choice.

He started at Ames in 1947, and still is there today, employed as a senior adviser, center historian and ombudsman. It hasn’t been a ruler-straight career path, though. Where other men could (rightfully) gloat about their accomplishments, Mr. Boyd is humble and not hesitant to turn his sense of humor inward. “They threw me out a few times to do different things, but I keep coming back,” he says of Ames.

Starting as a first-level aeronautical engineer, Mr.
Boyd worked on the first forays into wind tunnels and supersonic and subsonic aircraft, pioneering design efforts of conical camber wing shapes that were and are used on a wide variety of craft such as the F102, F106, B-58 planes, and testing the blunt “entry” shape of such craft as Apollo, Mercury and Gemini, and the original planetary probes for Mars and Venus. All of this was groundwork research started before President Kennedy’s 1961 mantra to get a man to the moon by decade’s end. “We were working on this technology before we decided to go the moon,” Mr. Boyd says. “We could not have started (in 1961) from scratch all the work they were doing from 1957, and get to the moon by 1969. The early research was done before hand. It really paid off.”

The men training on the supersonic jets, in part dreamed up and designed by Mr. Boyd and his fellow engineers, would prove famous. “We were privileged to work with a lot of those guys (astronauts),” he says, “when they were young test pilots.”

During this time, Mr. Boyd took part in a NASA-led effort to train engineers in business management via Stanford University. Mr. Boyd earned an MBA in 1966, after earning advanced degrees in aeronautics and physics 10 years prior, also from Stanford.

Mr. Boyd did indeed move up the management ladder. In 1961, he was named technical assistant to the aeronautics director at Ames. He oversaw a $20 million budget in research – huge money at the time – concerning wind tunnels, flight simulators and needed computer support. He became Ames’ face to NASA headquarters in Washington, D.C., and continued to move up management ranks. He helped and oversaw design of varying spacecraft, thermal projection systems that later would be used on the 1980s-era Space Shuttles. In 1970, he was elevated to deputy director of aeronautics by then-Center Director Hans Mark.

The move put Mr. Boyd in charge of Ames’ main research department, touching on civil and military craft and then far-reaching – and still challenging – technology such as VTOL (vertical take-off and landing) craft. Nine years later, he became Dryden Flight Research Center’s deputy director in Lancaster, Calif. This work tasked him with the vital work – approach and landing tests – on the then-future Space Shuttle Enterprise. In 1980, Mr. Boyd came back to Ames as acting deputy director and associate director. This placed him as a senior manager of not only Ames, but Dryden and Moffett fields as well. (Ames and Dryden eventually were combined in 1981, and separated again in 1994.)

Mr. Boyd headed east to Washington, D.C., in 1983 where he served as associate administrator for management. He oversaw staff, personnel, industrial relations, information management and security of NASA’s research centers. During President Ronald Reagan’s efforts to streamline government operations – removing redundancies, for instance – Mr. Boyd was NASA’s representative on the Grace committee. In 1984, he again returned to Ames as third head position, associate director. Here, he was singled out for opening NASA’s doors to minority employees.

In 1985, Mr. Boyd left NASA and government work to “retire.” But he didn’t sit still long, just longer than a weekend. He headed south to the Lone Star state, where he became chancellor for research for the University of Texas system. His boss was Hans Mark, a previous Ames director. He handled administrative duties, met with governors, the state legislature and successfully ballooned the statewide UTS research funding to $600 million per year in 1992, well past double from $250 million in 1985. He also was an adjunct professor at the state universities of Austin, Pan American and El Paso.

But space called again.

In 1993 Mr. Boyd yet again returned to NASA’s Moffett Field to establish the Ames Aerospace Encounter, an education program for K-12 students and teachers. The program is renowned for its hands-on learning environment. There, students get to “play” what many adults still dream of being: mission control operators, builders of aircraft, and astronauts. All simulated, of course. And there Mr. Boyd remains, 62 years into his career.

“I have found everything I have done is fun,” he says. He still gets excited about space missions. With NASA’s October 2009 Lunar Crater Observation and Sensing Satellite foray to the moon, scientists found large caches of water on the lunar body. “That’s kind of exciting that that much water was kicked up,” Mr. Boyd says.

Having helped see other men and women into space, has Mr. Boyd ever wanted to make the journey himself? Again, he uses humor. “I did at times when I was younger, but I decided about when I was 80 I didn’t want to do it,” he jokes, skipping a beat, then adding, “It would be a one-way trip.”

Despite that early interest in flying, Mr. Boyd didn’t push his piloting skills too far. He says he “made a better engineer than a pilot.” But he did one time fly as a passenger in a supersonic trainer jet, reaching mach 1.5. “The sound barrier was just a little thump,” he laughs.

Mr. Boyd’s career has rubbed off on at least one grandson. At 13, Zak has designed a quantum gravity machine that he says could get travelers to Mars in five minutes, not the now expected nine months, “It would be just like going down to the corner drugstore,” Mr. Boyd says, pride coming through clearly over a telephone. What engineering school Zak may attend still is up in the air.

Mr. Boyd has been married to Winifred Boyd for 60 years. The couple has five children and nine grandchildren.
Edgar B. Boynton
1921 Mechanical Engineering

In addition to being named one of the first initiates to the Academy of Engineering Excellence, Edgar B. Boynton will also mark a very special occasion this April. He will be celebrating his 100th birthday.

Born in 1899, the young Boynton spent his first nine years in West Chicago, Ill., a suburb of the Windy City, and then moved with his family to a dairy farm in Amelia County, Virginia. One of his favorite hobbies as a boy was music. He started piano lessons when he was eight, but by the time he entered high school, his male counterparts considered his musical talents “sissyish” and he bowed to the peer pressure. When he enrolled in engineering studies at Virginia Tech, he knew he regretted his decision to completely abandon his musical inclinations, and he resurrected his talents. However, this time, he selected the clarinet and played it in the VPI Cadet Band for four years.

He graduated from mechanical engineering at 21, and he was commissioned as a second lieutenant in the Coast Artillery section of the Army Officer Reserve Corps. He also started his lifelong engineering career with Wiley and Wilson in June of 1921. In the fall of 1923, he entered graduate school at the University of Illinois, where he received his master’s degree in ME one year later. He then returned to Wiley and Wilson. His engineering duties consisted principally of the design of heating, ventilating and air conditioning systems for buildings, and central heating systems and power plants for institutions. After a decade with the firm, he entered the management side, and shortly thereafter was named an associate. He helped to lead the firm through the Great Depression, and one of the company’s jobs at the time was the engineering work of Colonial Williamsburg.

In 1947 Mr. Boynton became a full partner in Wiley and Wilson. He stayed until Jan. 1, 1970 when he retired after almost 49 years with the company. He continued as a consultant, and remains a familiar face at the firm.

Mr. Boynton was the 68th engineer in Virginia to register as a Professional Engineer. He was the first recipient of the state’s “Engineer of the Year” award in 1961. In 1963 the American Institute of Consulting Engineers (AICE) chose him as its first member from Virginia. He was the recipient of the 1996 Virginia Tech College of Engineering Distinguished Alumnus Award.

Among his other honors include: former state President of the Virginia Society of Professional Engineers, fellow status in the American Society of Mechanical Engineers, former National Director of the National Society of Professional Engineers, and a member of the Virginia State Air Pollution Control Board for 22 years until he retired in 1987.

Mr. Boynton and his wife of 57 years, Anne Elizabeth England, reside in Richmond. He formerly played golf, and they have done a great deal of traveling.
John A. Brothers

B.S., Chemical Engineering, 1962
M.S., Chemical Engineering, 1966
Ph.D., Materials Engineering Science, 1968

To afford college, John A. “Fred” Brothers needed to attend a university with a good co-op program. At that time, one of his father’s friends, the President of Marshall University suggested a solid choice for engineering studies and for co-op would be Virginia Tech. The advice paid off. When Mr. Brothers retired in 1999, he was Executive Vice President of Ashland, Inc., a company with annual sales of $8 billion.

Mr. Brothers’ entire career was spent on a fast track that never hit the pause button. He selected chemical engineering because it was the highest paying field in engineering in the early 1960s. He co-oped with International Nickel, the company that also provided him with his first job after graduation in 1963. Not long after he joined the chemical company, he received a phone call from one of his former Virginia Tech professors, Roland Mischke.

“He called to tell me that he had a National Science Foundation Fellowship that was begging to be filled,” Mr. Brothers recalls. So he returned to Blacksburg and finished his master’s degree in nine months. Twelve months later, he was receiving his Ph.D. Dr. Fred Bull, an icon in the ChE department and a mentor for Mr. Brothers, waived his residency requirement, allowing the rapid academic ascent. As he was putting the finishing touches on his doctorate, he was already moving on to Ashland.

“I chose Ashland because the company exhibited an aggressiveness and its management was very young. At the time, senior officers were 40 years old. After five years with the company, they made me Vice-President of Engineering and Research at the age of 32,” Mr. Brothers says. From that point on, he just continued to climb Ashland’s corporate ladder. In 1982 the Huntington, W. Va, native was named President of Ashland Chemical Company; six years later he became a Group Operating Officer. In 1997 he reached the pinnacle of his career with his executive vice presidency. He retired in 1999 but continues to serve as a consultant to the company, a market leader in highway construction, chemical and thermoplastic distribution, specialty chemicals, motor oil and car-care products. The Fortune 500 company based in Covington, Ky., maintains sales in more than 140 countries.

Today, as Mr. Brothers looks back, he says his start-up days at Ashland were “a blur.” Early on as the VP of Engineering and Research, he was working seven days and six nights, building new refinery units. He initiated a particularly ingenious method of constructing a refinery when he was confronted with the winter conditions of Buffalo, N.Y. He used the concept developed in the 1960s by sporting enthusiasts who converted outdoor tennis courts into indoor tennis ‘bubbles’ in the wintertime. “I used an old inflatable plastic tennis court so we could build through the winter rather than wait until summer. A number of companies then adopted the idea,” Mr. Brothers smiles.

Mr. Brothers transitioned from the technical components of Ashland to the business side in 1975, a world he found exceedingly different. To help shore up his skills, he obtained an advanced management degree from Harvard in 1981 on a company sponsored sabbatical. It was shortly after this education that he was named President of Ashland Chemical. During his tenure, he doubled its sales from $1 to $2 billion. During that time he arranged for “dozens of acquisitions,” rising to the “thrill of the chase” as he recalls, and then after closing the deal, moving rapidly on to the next challenge. The final merger Mr. Brothers led was that of Ashland’s Refining and Marketing Business with Marathon’s same businesses in late 1997, creating Marathon Ashland Petroleum LLC. He remains a director of that company, a joint venture with annual revenues of $30 billion.

A particularly rewarding “acquisition” of sorts was his hiring of two other Hokies, David D’Antoni and Peter Bokach, also graduates of chemical engineering. As a doctoral candidate at Virginia Tech, Mr. Brothers taught both of them, and knew he wanted them on his team. His intuition was correct. Mr. Bokach just retired from Ashland Chemical as a Senior Vice President. Mr. D’Antoni remains at Ashland Inc., as its Senior Vice President. As he recalls, “Fred took a somewhat struggling, diverse, confused chemical business and brought focus to it. He grew the company into a solid, performing business through a series of divestitures.

“Fred also gave me opportunities early in my career that allowed me to advance rapidly. He always took time to talk to me, to keep track of me. As a result, I was able to move up the ladder.”

Today, Fred and his wife Paula travel to as many exotic places as they can, including China, Mongolia, Nepal, Tibet, Japan, Latin America and Africa. He is part owner of a duck hunting and a fly fishing club. And he and Paula chase turkeys with a telephoto lens. Mr. Brothers serves on the Board of Trustees of the Children’s Hospital of Columbus, Ohio, the Ohio Dominican College, the Columbus Museum of Art, and the Ohio State University Fisher College of Business. He is also enjoying the ability to spend more time with his three children and eight grandchildren.
Nicholas T. Camicia
1938 Mining Engineering

After graduating from Virginia Tech in 1938, Nicholas T. Camicia began his mining career with the Island Creek Coal Company in West Virginia. Within a year, at the age of 22, this son of Italian immigrants became the youngest mine superintendent in the history of the coal industry.

During World War II, Mr. Camicia served in Europe as an officer assigned to General Eisenhower's staff. He was decorated with the Bronze Star for his part in rehabilitating coal mines in Allied-liberated nations, and Queen Juliana of the Netherlands awarded him the Orange-Nassau Medal, her nation's highest military honor, for exemplary service.

Returning to Island Creek Coal Company after the war, Mr. Camicia rose through the ranks. During the 1960s, he was elected Executive Vice President and named to the company's board of directors, and served as President of two General Dynamics Corp. coal subsidiaries.

In 1969 he became President of The Pittston Company. The next year, he was named Chief Executive Officer of Pittston and was Chairman and CEO from 1976 to 1983. Under Mr. Camicia's leadership, Pittston became the leading independent coal producer and exporter in the United States.

Mr. Camicia's contributions to the progress of the coal industry were made over a career that spanned a half a century. He brought about contributions to labor relations (including serving as a mediator to bring about the successful settlement in 1978 of the longest coal strike in American history), as well as innovations in coal mining practice, market development, mine safety, and transportation.

Active in professional organizations, Mr. Camicia has served as Chairman of the American Mining Association, Bituminous Coal Operator's Association, National Coal Association, and the Coal Industry Advisory Board of the International Energy Agency in Paris. President Ronald Reagan appointed him to the National Productivity Advisory Committee and the Committee on the President's Private Sector Survey on Cost Control.

Mr. Camicia's leadership and service have been recognized with numerous prestigious honors, including the Erskine Ramsay Medal from the American Institute of Mining, Metallurgical and Petroleum Engineers; the National Coal Association's Distinguished Service Award; the 1975 Man of Conscience Award; and the 1978 Americanism Award.

Mr. Camicia (MinE '38) was among seven mining industry pioneers inducted into the National Mining Hall of Fame during a ceremony in Phoenix, Arizona in October of 1998. He is also the 1992 Distinguished Alumnus of Virginia Tech's College of Engineering.
Civil Engineering, Class of 1970, BS

Over a lifetime, Dan Carson has tended to not shy away from accepting leadership roles, starting with his senior class presidency in high school through his successful management career with Appalachian Power Company, to his current volunteer work with organizations such as the March of Dimes and his church.

The Pulaski, Va., native enjoyed a successful career as a dynamic electric power industry executive for more than four decades. Along the way, he managed to work on a multitude of projects, including the orchestration of support for land conservation measures, assistance in the restoration of the American chestnut known as the “King of Trees”, participation on Virginia Governor Tim Kaine’s Commission on Climate Change, and chairmanship of the United Way of Roanoke Valley campaign. In addition, he served with and led numerous state, community, and economic development organizations.

In 2011 Virginia Tech’s College of Engineering named him its Distinguished Alumnus, adding his name to a host of noted Hokie CEOs of companies such as General Dynamics, Exxon, and Hercules who have been similarly honored. The college bestowed this honor on Carson who had found time during his busy schedule to serve on its Committee of 100 and its Advisory Board, as well as serve his home department of civil and environmental engineering. In 2007 he was inducted into the CEE Academy of Distinguished Alumni. Carson had also orchestrated major industrial support for Virginia Tech’s Institute of Critical Technology and Applied Science.

Carson is a second generation Hokie, as his father was an electrical engineering graduate of Virginia Tech and a member of its Corps of Cadets. As a youngster he made the trek to Blacksburg often and the experiences propelled Virginia Tech to his number one choice for pursuing his college degree.

His father and his parents’ engineering friends’ influence led him to enroll in architectural engineering in 1966. This specific degree path was short-lived as the University decided to eliminate the program in 1967. Civil engineering (CE) then became the closest match for Carson who had found time during his busy schedule to serve on its Committee of 100 and its Advisory Board, as well as serve his home department of civil and environmental engineering. In 2007 he was inducted into the CEE Academy of Distinguished Alumni. Carson had also orchestrated major industrial support for Virginia Tech’s Institute of Critical Technology and Applied Science.

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That same year, fate delivered an unkind loss as a heart attack unexpectedly took the life of his father. But a close family friend who was the executor of the senior Carson’s estate managed finances to ensure that Dan’s college education was paid, “with little to spare when it was all over,” he recalled. Fortuitously, this executor was also an employee of Appalachian Power, and the company “was in my blood, so to speak,” Carson said. For a period of time during college, it generously provided him summer employment as a member of one of its survey crews.

As Carson graduated in 1970, his already sound relationship with Appalachian Power helped secure him an offer to join its Roanoke office as an engineer. He started as one of the designers of Appalachian’s parent company, American Electric Power’s (AEP), groundbreaking 765,000-volt transmission system. “The ultimate result was that we built an entire network,” Carson said, “analogous to the interstate highway system.” Historical records show the first 765,000-volt interconnection occurred in 1971 between American Electric Power and Commonwealth Edison.

As he moved rapidly into a senior role in the design of these extra high voltage transmission lines that are now known for generally providing the lowest-cost method for carrying large quantities of electric energy, he started to think about his long-term career path. He focused first on his credentials – achieving licensure as a professional engineer in Virginia and in West Virginia – and then on further education with an eye toward a management track within his company. Carson decided to enroll in business classes at Lynchburg College on a part-time basis, and did so for five years. He described the time as “fairly intense,” as his family was expanding while he was holding down a job, studying, and commuting to class at least two nights per week. His quietly ambitious nature landed him two rewards: his master of business administration degree in 1977 and the opportunity to work as an assistant to the president of Appalachian Power in Roanoke the following year.

After four years, the president, a mentor to Carson, recommended that the company sponsor the budding executive as a Sloan Fellow, leading to a master of science degree in management at the Massachusetts Institute of Technology. With his family in tow, he moved to Boston for 12 months, understanding that his next step could be to a management position anywhere within the seven-state AEP system. As things turned out, however, he was returned home to a Roanoke management position, then moved the following year to Abingdon to become manager of Appalachian’s far southwestern Virginia region.

In 1992, Joseph Vipperman, a Virginia Tech electrical engineering graduate who had become president of Appalachian Power, appointed Carson vice president with responsibility for the company’s rates and contracts, accounting, and government affairs functions. The latter involved acting as the company’s lobbyist, an opportunity that Carson said he “had never dreamed” would be part of his professional career.

He soon discovered how “government had a lot of influence on the well-being of the company, and that representing one’s interests successfully could be challenging and often was conducted within a very competitive atmosphere. As a lobbyist, and later as a manager of our lobbying corps, I understood that maintaining one’s
integrity and credibility was paramount. To compromise them could be ‘deadly’, so to speak, to the company’s effectiveness, with little hope of recovery.”

Carson dedicated more than a fourth of his career with the power company to refinement of the regulatory framework for the electric utility industry, and he found these efforts “to be extraordinarily challenging and extraordinarily rewarding. The complexities could be enormous, as could the difficulty of imparting understanding to those making the decisions. I was pleased with our record for achieving success.”

In 1996, his accomplishments led him to the position of American Electric Power President for Virginia and Tennessee, and he later returned to a similar position with Appalachian Power, based back in Roanoke, when a regional operating company structure was re-instituted across the AEP system.

Over a period of 14 years, he led the company through a series of industry restructuring initiatives and difficult price hikes “related to dramatic cost increases being incurred by the utility industry. New environmental controls on our power plants and upon coal as a fuel were the primary drivers; incremental capital investments that exceeded the original costs of building the plants were common,” Carson said.

Global warming had become an issue, and he served for a time on Virginia Governor Tim Kaine’s Commission on Climate Change. Carson described the commission’s charge as being an “attempt to judge the reality of man-made climate change, to evaluate the modeling that suggests dire consequences, to decide what, if anything, Virginia should do to address its particular concerns, and, finally, what Virginia might advocate for at the federal level.” Carson remains interested today as the debate on climate change continues and as new information regarding the issue is revealed.

In 2010, at age 62, he retired from his Roanoke office, and now among other things plays more golf. “You’d think I’d be a better golfer after 50 years” of playing, Carson joked. Some of that golf is played at Hilton Head where he and his wife Sandy co-own a home with friends.

His charitable work has been and remains very important to him, as most recently he served as 2009 annual campaign chair for the United Way of Roanoke Valley, and continues in a leadership role for March of Dimes causes. “The March of Dimes has done a lot over the years to reduce the incidence of premature birth and promote the cause of healthy babies. Personally, I’ve had three grandchildren born prematurely and understand how important the research funded by the March of Dimes is to all of us,” he said.

In 2010, Carson successfully proposed and brought to fruition a $1 million gift from AEP to Virginia Tech in the name of his friend and colleague, Vipperman.

Carson is a past chairman of the board of directors of the Virginia Chamber of Commerce, past chairman and director emeritus of the Western Virginia Foundation for the Arts and Sciences, and formerly served as board chair for the Roanoke Valley Business Council, the Washington County Chamber of Commerce, the Virginia Coalfield Economic Development Authority Advisory Board, and Roanoke Country Club.

He served in leadership capacities for the Virginia Manufacturers Association, the Virginia College Fund, the Virginia Foundation for Independent Colleges, the Virginia Foundation for Research and Economic Education (Virginia FREE), in addition to a number of Roanoke-area organizations.

Carson and his wife Sandy now have eight grandchildren. In his retirement, he said he’s been “focused on the grandchildren.” One of his two sons, Hunter, is a third generation Hokie, earning his master’s degree in environmental engineering at Virginia Tech. Carson is an elder and long-time member of Raleigh Court Presbyterian Church of Roanoke.
Vinod Chachra
Industrial and Systems Engineering, Class of 1968, MS
Industrial and Systems Engineering, Class of 1972, Ph.D.

Even the most seasoned entrepreneurs would bow to Vinod Chachra’s work ethic, and certainly to his investment in shoe leather.

That’s because Chachra, as the president and CEO of VTLS Inc. — the first spinoff from Virginia Tech and the first tenant of the Corporate Research Center (CRC) — spent a big chunk of time in the early days writing letters and crossing the globe, pitching to people he’d never met. This cold calling approach is not for the faint of heart.

His efforts over three decades prompted the Virginia House of Delegates to issue its own citation singling out Chachra’s work in February of 2014. The General Assembly passed the unique House Joint Resolution 405, citing its “respect and admiration for his commitment to the advancement and development of innovative technology in the Commonwealth and around the world.”

Achieving this international stature was not easy.

“To give you an idea of the pressure,” Chachra said, “during the first 19 months of the company, we were losing a thousand dollars a day, including weekends. There was a lot of negative cash flow going on. We originally thought that around the 12th or 13th month we would break even. That didn’t happen until the 19th month.”

But Chachra was determined. The founding director of the Center for Library Automation at Virginia Tech had spirited the development of novel software to automate library processes. The technology was unlike any other in the world. And Chachra had a marketing strategy.

“Our vision was not to limit our marketplace to the United States — we would go global from the start,” Chachra said. “Very early in the game I traveled around the world, just buying around-the-world tickets that allowed you to go anywhere you wanted. I would just keep going, eastward or westward, stopping at all the major capitals that would be candidates for library automation. Along the way I would write letters, saying, ‘I am coming to your country. I would like to meet the national librarian. Would he or she be available to discuss a new technology?’ The ones I met — some would listen and just nod their heads. Others listened and actually had questions. But these were absolutely, 100 percent cold calls. The people I talked to weren’t looking to buy a system or anything like that.”

His first success came in Australia, when a single university agreed to buy the VTLS package. The jackpot was Finland. It was 1986, and the VTLS paradigm was about to change dramatically. In typical style, Chachra had arranged a meeting with a complete stranger, Antti Soini, the director of the Finnish National Library IT group. Chachra’s best expectation was to discuss a contract to automate a single library. Before long, the Finnish minister of education entered the conversation. “The minister of education was very forward-thinking,” Chachra said. “He said, ‘Don’t talk about one library — talk about all the university libraries in Finland.’”

Chachra would go on to visit Finland six times, working out details of a three-year project. The result was a contract for $1.8 million to automate 19 libraries. And then, almost as a bonus, something unlikely happened.

“The minister believed the value of Finnish currency would fall against the dollar, and asked if we would be willing to accept prepayment for the work we would do in the next two years,” Chachra said. “It was wonderful. It got us funding in advance to grow the company, while we financed the delivery of the product.”

Chachra had learned how to build an enterprise from nothing since his birth. His family had migrated from what is now Pakistan to India. With no belongings, the family emerged from essentially a refugee environment solely because Chachra’s father, Nand Lal Chachra, was able to work.

“My father said they can take away all of your possessions, but they can’t take away your education. He was educated; he could find a job, and over the years he settled his whole family — brothers, nieces, nephews — everybody,” Chachra acknowledged.

So Chachra attended the Indian Institute of Technology, where he received the gold medal for being the best-performing student. He came to Virginia Tech and earned his Ph.D. in industrial engineering and operations research, and eventually would join the faculty.

Soon, another formative moment occurred. T. Marshall Hahn Jr., the 11th president of Virginia Tech who is credited with guiding the institution from college status to major research university level, singled Chachra out.

“After being at work in Burruss Hall for only a week, I saw this gentleman walk by. He looked at me and said, ‘You’re Vinod Chachra, and we are looking for good things from you.’ Here was the president of this institution, who sees a newly hired person, knows him by name, and is able to say a meaningful statement,” Chachra said. “I was tremendously impressed.”

With the mantle of expectation upon him, good things followed. From 1972 to 1985, Chachra successively assumed roles of director of software development, director of computing and information systems, vice provost, and then vice president of computing and information systems.

VTLS began in 1975 as Virginia Tech Library Systems, an automated circulation and cataloging system created for Newman Library. After more than five years of producing software and building a model for library networking, Chachra was asked by then Virginia Tech President William E. Lavery to lead the university’s first spinoff company. Lavery, who helped envision Virginia Tech’s
CRC, thought Chachra was a prime candidate to help the university flex its economic development muscles.

Virginia Tech was the majority stockholder in VTLS Inc., and Chachra, who had always been sure to “save resources for a rainy day,” purchased a stake in the company. From the beginning, Chachra thought it was important to move VTLS outside of the traditional university framework for it to be successful. He explained that in a university setting, investigators and administrators have to scrape for funding and regulatory approvals before research and development can even start. In a corporate setting, leaders can take a good idea, finance its R&D, and move it to the marketplace.

VTLS was in constant evolution. In the beginning, “there was a system to manage circulation, another to do purchasing, yet another to manage sales. We integrated all of these components and called it library automation,” Chachra said. “Today, the old integrated systems are completely gone. We don’t even call the present systems by the old names. What we do is continuous process of development. Practically every quarter we release new software, with new features, new capabilities, and new interfaces, and the base technology becomes obsolete. When that happens, you start over. It was during one of these moments, when we were starting our present product, when Virginia Tech decided it was not going to take the risk and cashed out.”

Today the VTLS acronym stands for Visionary Technology in Library Solutions, and it became an international leader in integrated library automation, digital asset management, and radio frequency identification technology. With six offices around the globe, it had a customer base spanning more than 1,900 libraries in 43 countries. In southwest Virginia VTLS received the Roanoke-Blacksburg Technology Council Hall of Fame award. And Chachra was a 2013 inaugural inductee of Virginia Tech’s Entrepreneurial Hall of Fame, a premier group of six mostly former engineering faculty members.

VTLS’ global reputation allowed Chachra to sell the company in May of 2014 to Innovative, a provider of integrated library system software, based in Emeryville, California. He stayed on for six months as its Vice President of Global Expansion, traveling the globe one last time for VTLS, making two trips to Asia and another to Europe, to ensure a smooth transition of customers, technologies, and products.

In his CRC office overlooking a forest of buildings where once there were only trees, Chachra admitted combining his company with a larger one, forcing some of his 80 employees to relocate, was “hard for me personally.” But some opted for retirement; others were happy to make the transition, and now 27 remain with the new company and are still working from Blacksburg.

Chachra retains his CRC office, using it for one of his first post-retirement jobs. The information technology guru is chairing the Broadband Committee to bring high-speed Internet to Blacksburg. This effort, supported by Virginia Tech, the town of Blacksburg, and the business community, has a goal of making an initial installation by August of 2015 and a completion date of 2017 when most of Blacksburg’s population should have access.

Chachra is a member of the Ut Prosim society of Virginia Tech and the College of Engineering Committee of 100. He is a past member of the advisory boards of the College of Engineering and the Department of Industrial and Systems Engineering (ISE). ISE also inducted him into its Academy of Distinguished Alumni. He is the author of two books and numerous journal articles.

He and his wife Ranjana have two children: Krisha and Virendra. Krisha is a writer and serves as vice mayor of Blacksburg. She is married to Derek Klinedinst, a Hokie with a Ph.D in materials science engineering. Virendra is an engineer and a financial manager, but is now learning to be an actor. He and his wife Marissa, who is a public relations executive in the medical field, live in Nashville, Tennessee.
Dr. G. John Coli

Class of 1941, BS, Chemical Engineering
Class of 1942, MS, Chemical Engineering
Class of 1949, Ph.D., Chemical Engineering

Having once left an executive position at a large corporation rather than compromise his principles, G. John Coli never flinched as he moved between competing companies, one of which named him its president within seven years of his arrival. Upon his retirement in 1986, he went on to serve as president and chief operating officer for St. Joseph’s Health Service Corporation for almost 20 years.

His work with the healthcare industry had a philanthropic aspect as well: Coli spent those two decades working tirelessly for the Asheville, N.C. medical facility as a volunteer, while at the same time making substantial financial contributions to St. Joseph’s. Today, his generosity is evidenced by the Critical Care Center at St. Joseph’s that bears his name.

“John is a generous, generous man,” says his wife Vonda. She continues, laughing, “He is also a stubborn Italian, hard-headed, wants everything his way, and I love him.”

The Italian background is one that many Americans have in common. John’s father, Guido, arrived in the U.S. by boat when he was 16 years old. He entered through Ellis Island, a symbol of immigrant heritage. According to its website, this “immigrant depot processed the greatest tide of incoming humanity in the nation’s history” as they sought freedom of speech and religion and economic opportunity.

Guido found this economic opportunity, making himself a millionaire, according to his son. Guido traveled to Richmond, Va., where a large Italian community had already formed. There, Guido met John’s mother, Rena Pacini, who also had entered the country through Ellis Island. They married and opened a restaurant together. The first restaurant was followed by a second, and then a third.

“Dad started as a cleaner in the first restaurant, and ended up owning it. They were all just sandwich shops, but Dad did well,” Coli recalls.

As John grew up in the city that once served as the capital of the Confederate States of America, he witnessed first hand the meaning of the phrase “land of opportunity.” The only son of his immigrant parents, he was able to pursue an engineering education in 1937, first by attending the VPI Extension campus in Richmond for two years. He then transferred to the Blacksburg location as a junior.

In 1939 he met Virginia Tech chemical engineering icons, Frank Vilbrandt and Fred Bull. “Fred became a personal friend, and convinced me that chemical engineering was a good field of choice,” Coli says. Vilbrandt later became so impressed by Coli that he tried to persuade him to become a faculty member; hence, he eventually pursued his graduate degrees, earning his master’s in 1942 and his Ph.D. in 1949.

During his college career, as with most students in the 1940s, the seven-year gap between his master’s and doctoral degrees is explained by his service in World War II. He
enlisted in the U.S. Navy, which used his intellectual skills to conduct wartime chemical research for the Office of Naval Research in Washington, D.C. When the war was over, Coli received a Citation from the Secretary of the Navy James Forrestal, also the son of an immigrant, and the main architect of the massive naval buildup during World War II.

After his wartime military service, Coli began his professional career, accepting employment with Mobil Oil in Paulsboro, N.J. for a year. He moved to Allied Chemical Corporation in New York in 1950, and eventually he was able to move back to his hometown of Richmond through his work with Allied.

He became very involved in the Virginia chapter of the American Chemical Society (ACS), rising through its ranks in the 1950s at the same time that the chemical industry in the Richmond-Hopewell, Va., area was expanding rapidly. Coli was with Allied when it opened its new fiber plant, forming part of the Allied Chemical and Dye Corporation in 1956. This same year, he was chairman elect of the Virginia Section of ACS. He served his term as chair in 1957.

In 1968, the Virginia Press Association presented Coli with its coveted Virginian of the Year Award. Others who have won this award include: tennis great Arthur Ashe, musicians Bruce Hornsby and Roy Clark, journalists James K. Kilpatrick and Katherine Graham, TV personality Willard Scott, and authors David Baldacci and Patrica Cornwell. Coli received the honor for his work in the business arena in Virginia.

In the early 1970s, Coli relocated to New York with Allied, but this is also the time he recalls “crossing the big guy” on a business matter. He left Allied where he had been a group vice president from 1950 until 1972 and a director from 1970-72.

He landed on his feet, joining American Enka Co., a leading producer of rayon, becoming its president by 1979. He was with the company when it moved its corporate headquarters out of New York to his current home in Asheville, N.C.

In 1982, he was named Akzo America Inc.’s president and chief executive officer, a position he held until he retired in 1986. Akzo America, with a current sales volume of $2 billion a year, is the North American unit of the Dutch chemical company Akzo. It makes chemical, synthetic fibers, coatings, and pharmaceuticals.

There was another significance to the year 1982 for Coli; he met his wife Vonda, who was also an employee of American Enka.

When he retired in 1986, he immediately became involved with the healthcare industry, working as the senior executive of St. Joseph’s Health Service Corporation, but in a voluntary capacity until his final retirement in 2005. In 1999, Memorial Mission Medical Center purchased St. Joseph’s from the Sisters of Mercy. By combining its services to form the Mission St. Joseph’s Health System, Coli helped lead the integration of the two organizations, which resulted in a profound change in the way that healthcare is delivered in North Carolina. Mission now operates under a Certificate of Public Advantage issued by the state and designed to insure that its charges are fair and it provides documented benefit to its community. Today, the healthcare center has some 6,600 employees with some $120 million dedicated to current or planned construction.

Coli’s philanthropic contributions were recognized by the naming of the 14-bed Coli Critical Care Center on the St. Joseph campus of the healthcare center.

Vonda describes the couple as “homebodies” where John has paid particular attention to his rose garden. They are supporters of the Community Foundation of Western North Carolina, the Asheville Human Society and the University of North Carolina at Asheville. They are among the founding members of Virginia Tech’s College of Engineering Committee of 100.

Coli is a member of Sigma Xi, Phi Lambda Upsilon, Tau Beta Pi, Phi Kappa Phi, and Alpha Kappa Psi. He is a Fellow of the American Institute of Chemical Engineers.

He has four children from his first marriage: Pamela, Patricia, Deborah, and Richard who died in 1989, and a step-daughter, Rebecca, from his marriage to Vonda.
When Joe Collie was growing up in the 1940s in Danville, Va., his life took the turn of most young men at the time. World War II took precedence and he would put off college until after the conflict. Upon his return from Europe where he was a combat infantryman, he used the G.I. bill to pay for his chemical engineering degree, earned at Virginia Tech in 1950.

Mr. Collie landed his first job with the Wall Street giant E.I. Dupont de Nemours. After a short stint with this Wilmington, Delaware based operation, he switched gears in 1958 and joined a small scientific supply firm to establish a chemical distribution operation in Durham, N.C. A year later, he married his wife Barbara, and they would have three children.

When his company and the owner faced some severe financial shortfalls, Mr. Collie decided to establish his own chemical distribution firm. His story now becomes a rerun of the American Dream. It should have been a scary time for a youthful parent to go out on his own, but Mr. Collie doesn’t recall having any fears. “I think if you have a vision to accomplish something, there is no way it can’t be done.”

“I never would have taken the chance if the owner wasn’t headed for bankruptcy,” he recalls. “I had to leave him in 1969 or go down with him.” Collie’s wife has a slightly different recollection of this time in their lives. Barbara suggests the time was a bit more traumatic than her husband lets on, but she also remembers their enthusiasm and determination to succeed. “We had nothing at the time,” she says, so “we had nothing to lose. It was the ideal time to take a chance.”

Although his first year of business (1969) only produced a $10,000 profit, his company, Southchem Inc. of Durham, N.C., recorded $1 million in sales. This figure doubled in year two, and he soon established distribution centers in other North Carolina cities, as well as in South Carolina and in Virginia.

As Mr. Collie organized his business, he decided that his best course of action would be to provide his services to smaller cities such as New Bern, N.C., Florence, and Spartanburg, S.C., and the Lynchburg and Tidewater areas of Virginia. Southchem became the local choice for these communities, and it did not have to compete with the large companies already serving the Atlantas, the Charlottes, and the Richmonds.

By the end of 1992, when the entrepreneur was ready to sell his business, sales had reached $58 million. He shopped around very carefully before he sold his dream in 1993. He wanted to make sure his employees would be treated fairly by a new owner and that the now eight communities that they lived in would do well. He finally settled on a large German distribution firm, Veba, which met his requirements.

The Virginia Tech-trained chemical engineer maintained his strong commitments to his employees because he attributes the success of Southchem to their skills and motivation. “I believe if you give people what they want, they will give you what you want....It may sound trite, but you have to get the right people...and you have to give them incentives.”

He reports that by the end of 2000, sales increased to $120 million, and Southchem is still run as a separate entrepreneurial operation with little change in style or management. Mr. Collie, who retired in 1995, continues to serve as a Southchem board member.

In 1995, Joe and Barbara Collie presented Virginia Tech’s Chemical Engineering Department with a $1 million gift. He specified this money should be used to establish a chaired professorship dedicated to developing an interdisciplinary program in chemical distribution and marketing. Dr. Joseph Sullivan was chosen for this position, and is creating a strong program.

This program is unique to Virginia Tech’s Chemical Engineering Department. There are similar programs in colleges of business at other universities, but this is the first one specifically for chemical engineering in the nation.

Mr. Collie has served as the past president of the National Association of Chemical Distributors, the Southeastern Chemical Distributors Council, Durham Sales and Marketing Executives Association, Durham Kiwanis Club, and his own 100th Infantry Division Association. In addition, he is a former administrative board chairman of Epworth United Methodist Church, and a former director of the Durham Chamber of Commerce, Central Carolina Bank and Trust Co., and Durham YMCA, and several venture capital firms.

Joe and Barbara Collie have three married sons, Charles, Paul, and Scott, and five grandchildren. Mr. Collie’s hobbies include golf, scuba diving, photography, art and traveling. He is a member of the Ut Prosim Society of Virginia Tech, and has also served on the University’s Foundation Board.

For the next entrepreneur, Mr. Collie advises that it is easier “to take the leap” when one is younger. The person “should have a vision, work at something he/she enjoys, and maintain integrity.... If not, you will suffer.”
Philip R. Compton
Aerospace Engineering; BS, 1947

At the age of 86, Phil Compton still has about 30 reasons to get out of bed early five days a week. Since 1990, the octogenarian has reported to work, Monday through Friday, to his volunteer job — reading to the more than two dozen first graders at the Front Royal elementary school.

“There is no better way to start the day than to interact with those youngsters. The boys will give me a high five, and the girls will put their arms around me,” says the retired NASA administrator who also spent parts of his career at Westinghouse, Douglas Aircraft, Lockheed, the Research Analysis Corporation (RAC), and the National Bureau of Standards.

Compton’s career in the aerospace industry prompts him to often bring scientific topics into his reading. “I start with the simple first grade books, but I will often move to conversations about the planets, or the sun, or planting a seed. After Chris Kraft presented his Apollo Moon Rock to Virginia Tech, I took a couple of minutes to tell the story to the kids,” the grandfatherly Compton says. The room gets especially quiet when Mr. Compton tells one of his personal stories.

And the job occasionally comes with perks. “One of the first graders asked me to dinner recently,” Compton smiles.

Age is truly just a number for the 1947 aeronautical engineering graduate of Virginia Tech. At 80, he purchased his first personal computer and secured an email account. The World War II veteran was able to get “dec71941” as his cyber world identity.

When he was 75 in 1995, he obtained his pilot’s license and flew a Cessna 172 for four more years. He completed the flight program in 1942 when he had enrolled in the Civilian Pilot Training Program at Virginia Tech. His second time around as a pilot was enjoyable until one day, at 79, he knocked his glasses off while he was in the control seat, a few miles from the airport. “I fumbled around until I found them, and then I decided I did not have to fly anymore. I asked the airport manager to give my navigation equipment to someone who couldn’t afford to buy it,” the kindhearted gentleman says.

Compton understands humble beginnings. He describes his dad as “a carpenter and his mother as parents who loved their family.” When he graduated high school in 1937, the 18-year-old went straight to prep school and then to work for the District of Columbia’s Highway Department. After a few years on its survey crew, he and his parents took a drive to Virginia Tech and met with the Dean of Engineering. Immediately after his “interview” with the dean, Compton was told he could enroll, but he would have to be in the military. His parents drove off, and he was left in the engineers’ battalion.

Not too long after he began his studies at Virginia Tech, the “military came to VPI and took us away. I ended up in the
Pacific Theatre in World War II and did not return until three years later in August of 1946,” Compton recalls. He had become a first lieutenant. He had also used a leave to marry his sweetheart of many years, Kitty, whom he had met on a blind date on his first Christmas Eve after high school graduation. Recalling knocking on her parents’ door, and having Kitty open it, he says the meeting was an immediate “Bingo!”

In 1947 Compton graduated and, with Kitty at his side, went to work for his first Fortune 500 company, Westinghouse. He roamed around the company on various assignments eventually landing in the Aviation Gas Turbine Division, building the machines for Navy fighter aircraft.

“This job made me realize that I needed more schooling. When I was in school, everything was propellers. Now they were jet fuel aircraft,” Compton says. In less than 12 months he earned his master’s in aeronautical engineering from Georgia Tech, and took a new position with Douglas Aircraft in Long Beach, Calif. He worked on transport aircraft and a bomber project. When he left Douglas in 1961, he was the Assistant to the Vice President of Engineering. His vice president was offered a job at Lockheed, so Compton went with him.

In 1964, he returned to Virginia to become the Director of Program Development with RAC, located in McLean. For 10 years his work included development of new corporate wide programs in operations research and systems analysis in both the Army and non-defense areas. It was essentially a “Think Tank” operation, Compton says.

He left RAC to join NASA, “an extraordinary group of technical people,” Compton asserts. His interview for that job was conducted by former astronaut Jack Schmidt of Apollo 17 fame. “We spoke for about three quarters of an hour, and I came home and told Kitty I thought I had the job. She asked, ‘What is it?’ and I responded, ‘I don’t know. We never talked about that,’” he laughs today. Compton’s scope of knowledge and prior reputation landed him the job.

He later became the chair of the Capitol’s section of the American Institute of Aeronautics and Astronautics and met folks like Wernher von Braun, one of the most prominent spokesmen of space exploration in the United States during the 1950s, and Edward Teller, the father of the hydrogen bomb.

“My position was like a lightening rod for meeting influential people,” Compton recalls.

Compton spent his last 12 years of work with NASA in Washington, D.C. as a Program Manager of Advanced Technology. His responsibilities included the oversight of studies and plans for the long-range aeronautics program. He conducted advanced systems studies and analyses of future aircraft design concepts. During this time he was also elected the 1983-84 President of the Virginia Society of Professional Engineers (VSPE). Afterwards, NASA presented him with its Space-Ship-Earth Award for his VSPE presidency, as well as his work leading up to this time.

In all of the places he worked, his best memories were the friends he made. “It is just that simple,” he says. But when pressed, he adds that flying on the Air France Concord will always be a highlight, as well as earning his amateur radio license (Amateur Extra).

Compton has served as a member of the Zoning Appeals Board for Warren County and for Front Royal, Va. He was also on the Front Royal — Warren County Airport Commission. He served on the Citizens’ Advisory Board for the Front Royal Police Department, and he has volunteered in the past to take fingerprints and conduct sobriety checks.

And he remains a Sunday School teacher at the Front Royal United Methodist Church and on its long range planning committee. “People my age are talking about the future of the church. We are not steeped in tradition,” he acknowledges.

Phil and his wife Kitty, now deceased, are the parents of two daughters, Georgia Fischel who formerly chaired the Operating Board of the Lexington Virginia Horse Center, and Carol Hopkins, financial counselor with Metropolitan Life Company, who lives in Connecticut.
Thomas B. Cox was destined to work in the field of metallurgy. He grew up in Steel Country, 40 miles west of Pittsburgh in eastern Ohio. His father worked as a foreman in a steel mill for part of his career before entering the banking industry as a trust officer. "I was surrounded by steel mills that lit up the sky at night," Mr. Cox says, adding that the best jobs in town were held by the engineers who kept those mills running.

Mr. Cox came to Virginia Tech in 1961, funded by a co-op program with National Steel Corp., the only way he could afford college. Virginia Tech operated in academic quarters at the time, and he alternated college with working at the mills at home. His freshman and senior years, he went full-year as a student. During his junior year, he was able to spend three quarters in Manchester, England. Virginia Tech didn’t have a study abroad program at the time, so he constructed a course syllabus with department leaders here to study overseas. The trip to England was by sea, on a small ship with 1,000 students. The 10-day trek was hit hard by a storm, which tossed the ship about. "It was scary," Mr. Cox recalls. "We ate on the floor with the ship’s furniture tied to the walls." The return trip home was by a four-engine propeller plane, with a stopover in Iceland. He asks, "Anyone else remember those days?"

Once back in the states, Mr. Cox finished his bachelor’s degree in 1966, and launched directly into a master’s degree at Tech in the same field, finishing in 1968. At the David W. Taylor Naval Ship Research and Development Center, in Annapolis, he helped develop new compositions of matter and processing for high strength steels, including HY-180, and new titanium alloys. The work involved modifying the compositions and processing of alloys to determine the effects on their physical properties in order to create stronger and tougher hull materials for ships and submarines. During his 1968-1976 career at Annapolis, Mr. Cox earned his Ph.D. in materials science and engineering from Carnegie Mellon University in 1973.

From 1976 to 1979, he worked with the U.S. Department of Energy in Washington, D.C., managing alloy research programs for coal gasification technologies. His career then took him west to the Lawrence Livermore National Laboratory, near San Francisco, where he managed a plutonium technology program and facility, including plutonium alloy research, and the design and fabrication of hardware for weapons tests.

In 1981, he went to work for Amax Corp.’s Climax Molybdenum research and development division in Ann Arbor, Mich. There, he developed composition of matter and processing of high strength steels for
pressure vessels and oil industry uses, subsequently moving to Golden, Colo., to manage all alloy research for Amax.

In 1989 Mr. Cox joined the General Electric corporate research center in Niskayuna, N.Y. There he managed metallurgical research and development in support of GE’s businesses before being promoted to technical director of the giant’s Global Research Center. He was tasked with overseeing the technical work of 1,400 scientists with a $200 million research budget. Mr. Cox was instrumental in initiating GE’s partnering with international technologists, starting in 1994 with institutes and universities in the former Soviet Union just a couple of years after the superpower collapsed. He played a leading role in the establishment of GE research and engineering laboratories in Bangalore, India, and Shanghai, China, in the late 1990s before retiring at the end of 2001.

Charles “Chip” Blankenship, a fellow Hokie alumnus who is now vice president and general manager of GE’s commercial engines operation, accompanied Mr. Cox on a number of those pioneering trips to Russia. “We did work together on acquiring some Russian technology and that included a few trips to the Ural Mountains,” Mr. Blankenship says. “We ate things we didn’t recognize and we experienced new and interesting cultures and things together, and had our fill of vodka.” Some of the food they ate could rival haggis as daring, and local drinks also could raise eyebrows. They drank fermented horse milk that was carbonated, and another beverage that would solidify similar to cold beef gravy if not drank quickly.

Mr. Cox has shown “leadership in innovative research and development approaches, including partnering with [the] former Soviet Union institutes to commercialize fundamental metallurgical process technologies such as high-gradient casting,” says Mr. Blankenship. The two first met when Mr. Blankenship interviewed for a position at the GE Research Center in 1992. Mr. Cox was the hiring manager. “I’ll never forget the question he asked,” Mr. Blankenship says. “It is one of the best interview questions I ever heard.” Mr. Cox had asked the recent doctoral graduate to pick one accomplishment made during his Ph.D. studies that made a difference. “For a graduate student, you always want to list 19 or 20 things you think are important. And to try and boil it down to one thing that makes a difference was a real challenge,” Mr. Blankenship says. For the record, Mr. Blankenship can’t recall his answer. The two remain friends, bonding over Virginia Tech memories, football scuttlebutt and family news. “He challenged each person whether they were a technician, staff scientist or manager to keep getting better and excel,” Mr. Blankenship says. “I learned a lot from him as a leader.”

Mr. Cox holds five U.S. patents for composition of matter and the processing of metallic alloys. He also has authored 20 papers for referred technical journals and was elected to membership in Tau Beta Pi and Sigma Xi.

In June 2008, in celebration of their 40th wedding anniversary, Mr. Cox and his wife, Cheryl, moved from Clifton Park, N.Y., to Boulder, Colo., to be closer to their daughter and the Rocky Mountains which they both love. He carried with him a lifelong passion of singing classical and sacred music from the Burnt Hills Oratorio Society in New York to the Boulder Chorale. His love of theater is that of an audience member, not a performer, as he served for many years on the board of directors of the Capital Repertory Theatre in Albany, N.Y. He is an avid lap swimmer and he has served on the board of the YMCA. The scenic views from his new home remind Mr. Cox of his days at Virginia Tech in Blacksburg, “the scenery is fabulous and the hiking is great,” he says. Without being asked, he promptly and graciously sends a stranger a photo of the mountains surrounding his home.
William A Cox, Jr.

1934 Mechanical Engineering

When William A. Cox, Jr.’s family moved to a farm in the middle of his seventh grade education, he was a city boy going to the country. So to learn something about farming, he enrolled in agriculture at Oceana High School, missing out on classes in chemistry and physics. He became active in 4-H, and served as the president of a tri-county 4-H group. As a teenager, his interests were in hunting and fishing, not in engineering.

However, his high school baseball coach Sherman Seelinger encouraged the young Cox to travel across the state to VPI in 1930. He rode the Huckleberry Train to Blacksburg, arriving early in the morning during a dense fog. He was immediately introduced to the military “rat” system, and he did not find the weather or the social structure very attractive. His freshman year was not his finest from an academic standpoint, and he did not expect to return. But after a summer back on the farm, he became eager to rejoin his classmates at VPI. His lackluster grades provided him the opportunity to grow very familiar with the dean’s office, and he did not expect to return. But after a summer back on the farm, he became eager to rejoin his classmates at VPI. His lackluster grades provided him the opportunity to grow very familiar with the dean’s office, and by his junior year, Dean Norris became a counselor for the Hokie. As a result of his underachievements during his freshman year, the mechanical engineering student had to promise the Dean that he would earn As and Bs in classes where he did not have the prerequisites. The Dean also encouraged Cox’s choice of a flying career, allowing him to take aircraft and engine electives in lieu of a course in heating, ventilation, and air conditioning (HVAC). And, once again, he avoided some chemistry.

Upon graduation from Virginia Tech in 1934, Mr. Cox and his now deceased brother Marion King (1940, VPI) started their own business, renting boats at Virginia Beach. Although this occupation lasted only a few months, he would eventually return to owning his own business. He spent five years with R.F. Trant, Inc., of Norfolk. Ironically, he was now in HVAC engineering, which he had avoided in college. He prepared by taking a greatly condensed course in HVAC engineering at a Frigidaire factory.

In 1941, with World War II looming, the Army Reserve First Lieutenant volunteered for active duty with the 71st CA(AA). After three years of service in various CONUS positions, he was promoted to Lieutenant Colonel. He served in the Allied defense of the United Kingdom and the Port of Antwerp. He transferred to the Headquarters of General George Patton’s Third U.S. Army in Germany, serving as the Executive Officer of the Antiaircraft Artillery Staff Section. He was awarded the Bronze Star with the Oak Leaf Cluster. He was promoted to Colonel and remained in the active reserve from 1946 until 1964.

In 1946 Col. Cox co-founded the Cox-Frank Corporation, a Norfolk, Va. mechanical and general contractors firm. After several years, Mr. Cox bought out Frank, and the firm was eventually renamed Cox-Powell, in recognition of another Virginia Tech engineering alumnus, J.V. Powell, Jr. Powell, a chemical engineering graduate of Virginia Tech, also without HVAC classroom experience, had joined the firm, making his mark as Vice President. As a result, Mr. Cox made him a partner. Both were Professional Engineers.

After nearly four decades, Mr. Cox retired in 1984, continuing his separate part-time consulting engineering practice.

Mr. Cox has held a number of leadership positions during his career. He served as the President of the Virginia Society of Professional Engineers (1953-54), the Builders and Contractors Exchange (1956), the Kiwanis Club of Norfolk (1959), the National Society of Professional Engineers (1980-81), and the National Academy of Forensic Engineers (1985). He is also a past chair of the Hampton Roads Sanitation Commission (1975-77), and held membership on the Virginia Beach General Hospital Board of Directors.

His honors include: the 1972 Engineer of the Year, Tidewater Chapter of VSPE; the 1973 and the 1981 Engineer of the Year, VSPE; the Most Outstanding Member of the Associated Professions in 1980, awarded by the Virginia Association of Professions; and the Distinguished Alumnus Award for 1981 for Virginia Tech’s College of Engineering. The cities of Norfolk and Virginia Beach proclaimed July 25, 1980 as “Bill Cox Day.”

Mr. Cox recently celebrated his 62nd wedding anniversary with his wife Sue Hume Cox, and they have three sons and six grandchildren.
William S. Cross, Jr.

1941 Industrial Engineering

Upon graduation with a degree in industrial engineering from Virginia Tech in 1941, William S. Cross, Jr. joined the U.S. Steel Corporation of Youngstown, Ohio. However, his career was interrupted with the outbreak of World War II, and he was assigned to active duty by the U.S. Army as an artillery officer in Panama and in the European Theater of Operations. During the course of the war, he was awarded the Bronze Star Medal and five battle stars. He left the service as a Lieutenant Colonel.

After the war, Mr. Cross joined the Gary Steel Products Company in Norfolk, Va., and advanced to the position of Chief Industrial Engineer. However, this was only the beginning of his life's ambition. He founded the Cross Sales and Engineering Company in Greensboro, N.C. in 1954.

Under his chairmanship, the Cross Company has grown to become one of the largest distributors of fluid power products in the U.S., with branches in eight states. It is also a leader in the use of computer-aided-design (CAD) for the fabrication of hydraulic power units. The Cross Company also has become the leading firm in its area in the design, fabrication, and application of electronic controls and actuators in factory automation.

Mr. Cross is quite active in civic and community affairs. He has contributed to several church related activities, including serving as a church school teacher for 48 years. He has also served as President of his Rotary Club, Vice Chairman of the Greensboro Human Relations Commission, Vice President of the city's Chamber of Commerce, and as a member of the Boy Scout Eagle Board. He was a Director and Secretary of Starmount Forest Country Club in Greensboro. His professional services include a tenure as Chairman of the North Carolina Product Liability Task Force, and as President of the Fluid Power Distribution Association. He is a member of the Heritage Society of the Greensboro Community Foundation.

Mr. Cross is a Professional Engineer, registered in North Carolina and in Tennessee. He is a member of Virginia Tech's College of Engineering Committee of 100 and the University's Ut Prosim Society. He has endowed the William S. Cross Chaired Professorship in the College of Engineering. He has also endowed a scholarship for athletics and for the Corps of Cadets. In 1990, he received his alma mater's Distinguished Alumnus Award.

He is married to Ellen Cross. He has four children and nine grandchildren, one of whom is a senior at Virginia Tech.
Raymond G. Curry, Jr.
Civil Engineering
Class of 1954, BS

Ray Curry Jr. started in the family construction business at age 14 working during summers and holidays, and later helped lead his father’s company before breaking out on his own by founding two more companies, all in the Washington, D.C., area, where he still resides. He helped build the Market Square Project and the Watergate Complex, a project controversial for its building style and design. He has worked on more than 300 high-rise concrete construction projects in the Washington, D.C., area.

Mr. Curry was the first to attend college in his family. “I was the first person [in my family] to have that opportunity,” he says. “I thought I should take full advantage of it.” But college was not his first plan. Many of his construction coworkers were World War II veterans who encouraged the high school teen to further his education. “I never really had an interest,” Mr. Curry says. “They told me to go to college and make something of myself.” He graduated from Virginia Tech in 1954 with a bachelor’s degree in civil engineering.

After college, Mr. Curry served in the Army Corps of Engineers from 1955 until 1957 as a project engineer in Okinawa in the continuing post-World War II rebuilding efforts in Japan. He supervised the building of air fields, highways, radar bases, fire stations, water and sewage treatment facilities, and apartment buildings.

When Mr. Curry returned to the States, he also returned to the family business, MOSES-ECCO, a high-rise concrete construction company. His father co-owned the company with three other men, purchased from a man with the surname Moses. The men kept the name Moses as a sign of respect, while “ECCO” comes from the initials of each of the owner’s last names. Mr. Curry worked his way up from engineer to superintendent and shareholder. One of his earliest projects was the Watergate Complex, a series of office buildings, condos and a hotel, plus shopping center that sported a then-groundbreaking post-tension concrete job, and was designed — by Italian architect Luigi Moretti — as a series of curved buildings, with no straight angles. He poured 17,500 square feet of concrete per day and completed a floor every four days.

“It was all built on radials, constantly changing curves,” Mr. Curry says. “It was very difficult putting in post-tension cables in something like that.”

In 1970 Mr. Curry broke out on his own and formed SMC Concrete Construction Inc. He chose the high-rise concrete industry in keeping with his education and prior family work experience. He spanned his business clientele south to Richmond, Va., and north
to Baltimore, Md.

His career-favorite project is the 1-million-square-foot Market Square in Washington, D.C., located directly across from the National Archives, and designed to blend in as a historical building. Other landmarks he was involved with: The Library of Congress's National Audio Visual Conservation Center in Culpeper, Va., and Tyson's Corner Shopping Mall — one of the nation's larger shopping malls, and Jefferson Square, a multi-use high-rise complex. The Conservation Center features curved, cast in place exposed architectural concrete walls, and an environmentally green-roof system, which helps filter pollutants and carbon-dioxide out of the air; it also reduces heating and cooling loads on the structure. His buildings have won numerous awards.

Mr. Curry started Curry Development Inc. during the 1980s, focusing on the office and apartment sectors, townhouses, single-family houses, retail centers, and an industrial park. His company built what he calls the first affordable housing projects in Fairfax, Va., for lower-income families. The company also renovated abandoned apartment buildings inside the Beltway.

He then jumped into banking in the 1990s with Bank of Alexandria, first as a stockholder and buyer, then as president and chairman of the board. It was a different way to learn a business. He grew the bank, and then sold it to F&M Bank.

Mr. Curry’s post-military work also had him traveling abroad. During the late 1960s, he spent time examining concrete industry products in Europe. His task: look at then-innovative applications of pouring concrete to see if their design systems could translate overseas to America.

He also traveled to Saudi Arabia several times in the late 1970s, working as a consultant for Aeromaritime Ltd., on precast plants and precast houses along the Yemen border. But as late 1970s Middle East turmoil grew tumultuous, his work there was abruptly stopped and he returned home.

Mr. Curry and his wife, Madelyn, are members of the Ut Prosim Society, and have given several donations to scholarship funds, established the Raymond and Madelyn Curry Graduate Fellowship, and helped fund the expansion of the university’s structural engineering lab. Originally opened in 1990 and expanded several times, Mr. Curry’s donation helped build offices and meeting rooms for graduate students working in the lab. The facility was rededicated as the Ray and Madelyn Curry Education Wing and the Thomas M. Murray Structural Engineering Laboratory in 2009.

“Students get to experience the practical side of structural design, because they typically have to design and construct their own specimens,” says Carin Roberts-Wollmann, the lab’s director and a professor of civil engineering. “They build formwork, tie reinforcing steel and cast concrete.”

Thomas Murray, a member of the National Academy of Engineering, and a retired professor from the College of Engineering who founded the lab, says the facility’s impact on students is immediate. “I have had happy employers ask, ‘What have you done directly with these guys because they have a different outlook on how to put things together.’ And that comes from working in the lab,” he said.

Mr. Curry is a member of the Virginia Chapter of Associated Builders & Contractors, the D.C. Metropolitan Subcontractors Association, Alexandria Chamber of Commerce, Fairfax County Chamber of Commerce, Alexandria Building Industry Association, District of Columbia Building Industry Association, National Association of Industrial and Office Parks, American Society for Concrete Construction, American Concrete Institute, Concrete Reinforcing Steel Institute, and Metropolitan Washington Chapter of Associated Builder and Contractors. He is starting his second term on the Alumni Board of the Charles E. Via Jr. Department of Civil and Environmental Engineering Department at Virginia Tech. He was inducted into the department’s Academy of Distinguished Alumni in 2007.

Mr. Curry retired from SMC Concrete Construction, Inc. in June 2011. He lives in Alexandria, Va., and has four daughters and seven grandchildren.
David J. D’Antoni
Chemical Engineering; BS, 1967

David D’Antoni is a man who is used to dealing with the “B” word — billions, that is. From 1988 until his retirement from Ashland Inc., in 2004, each position he managed represented an area that had annual revenues in the billions.

Not bad for a young man who grew up in the 1960s in Huntington, W. Va., as the son of a World War II fighter pilot. At that time, college tuition costs were a concern to the D’Antoni family as the teenager searched for a school that would provide him with a good engineering education.

“I applied to Cincinnati, Georgia Tech, Michigan and Virginia Tech, all of which had co-operative education. I wanted the added value of a practical experience,” D’Antoni recalls. “I was accepted at all of them and I went to my dad to ask how I should make my decision.” His father’s answer was immediate: Virginia Tech. At half the price of the others, “it was a value-based decision,” he adds today, “and a great one.”

His second decision that steered his career was also pragmatic. He thought he would study metallurgical engineering at Virginia Tech because a good friend of his father’s worked at International Nickel, and promoted the field to him. When D’Antoni arrived at Virginia Tech, and needed to sign up for his curriculum, he wrote chemical engineering (ChE). “I was not sure how to spell metallurgical,” he laughs, but “I loved chemistry.” It turned out to be a lucrative choice.

As a college freshman, the high school overachiever found he lacked some necessary self-discipline, despite starting out as a member of the Corps of Cadets. His first quarter ended rather dismally grade-wise, but a serious talk with his grandfather, a mechanical engineer, helped him realign his priorities. In fact, by the time he graduated, he was a member of three honorary societies: Tau Beta Pi, Phi Kappa Phi, and Phi Lambda Upsilon.

During his college education, he also found a life-long friend, a mentor, and at times, a boss in J.A. “Fred” Brothers, who today is a retired executive vice president of Ashland Inc. As a ChE doctoral candidate at Virginia Tech, Brothers taught D’Antoni, and Brothers says the younger man made “a lasting impression” on him. His intuition would prove to be correct.

When D’Antoni graduated in 1967, he had a multitude of job opportunities. But, similar to his easy stories about how he chose Virginia Tech and chemical engineering, he relates another straight-forward tale about how he selected EXXON for his first job. “I left Roanoke on Dec. 22, 1966 on a blowing, cold 38 degree day, and arrived in Baton Rouge where it was 78 degrees….I stayed for six years,” he smiles.

He quickly gained responsibility, moving from a process engineer to a process engineering supervisor to a plant superintendent with EXXON Chemical. The company was known for relocating its people around the country to broaden their experiences, and when the time came for D’Antoni to
move, he let his friend Brothers know. “I thought that if I had to move, I might as well consider Columbus, Ohio,” the home of Ashland’s chemical businesses.

Brothers successfully recruited D’Antoni away from EXXON, and the friendship was sealed for their lifetimes. “Fred gave me opportunities early in my career that allowed me to advance rapidly. He always took time to talk to me, to keep track of me. As a result, I was able to move up the ladder,” D’Antoni recalls. He held ten different jobs in 15 years before he landed one of the top management positions. Along the way, he also completed the Harvard Business Advanced Management Program in 1985.

In 1988, D’Antoni was named the Senior Vice President of Ashland, Inc., and the President of Ashland Chemical Co., with annual revenues of $3 billion. In 1999 Ashland Inc., named him its Senior Vice President and Group Officer and a member of its Executive Committee. In 2001, Ashland added two companies to his portfolio. From then until his retirement in 2004, D’Antoni also headed Valvoline Oil with revenues exceeding $1 billion annually and Ashland Paving and Construction Co., the largest highway paver in the U.S. with revenues at $3 billion.

D’Antoni recalls one of the most rewarding experiences of his career with Ashland was when he was placed in charge of its polyester resin business in 1979. “The company had tried to sell this division. It wasn’t sellable,” he says. So, when D’Antoni assumed responsibility for the struggling unit, he decided the way to save it was through acquisitions. “Now it is one of the most successful businesses” Ashland owns, he adds.

He orchestrated a second major success for Ashland as a Group Vice President of Ashland Chemical with one of its smaller businesses that focused on the electronics business. From a value of literally zero dollars, D’Antoni oversaw the transformation of the division to the largest seller of ultra high purity electronic chemicals in the U.S. Recently Ashland sold this business for about $300 million.

“When I was named President of Ashland Chemical, it was not a surprise but it was still exhilarating. And every time I got more responsibility, I realized what was at stake. I had a responsibility to my employees to ensure that the businesses were successful.

When I would see all the kids of the company’s employees at our annual Christmas party, that responsibility would really hit home,” D’Antoni says. “Businesses are about people, processes and plans. It’s easier to lose pounds than manage a business,” the engineer says.

Although now officially retired, D’Antoni remains professionally active serving on the board of directors of three companies — Compass Minerals, Omnova Solutions and State Auto Insurance. “I spend a few weeks each quarter with these boards, but I primarily now play golf for a living,” D’Antoni laughs. With a handicap of four, his competitive-ness still shows. And in the last year, he has traveled to Cabo San Lucas, Sarasota, Phoenix, Ireland, and Tampa to play with friends.

His community activities have been as successful as his business acumen. After an introduction to the President of Franklin University of Columbus, Ohio, he spent 15 years on its Board of Directors, now serving as past chairman. During that time the school went from a $3 million endowment to one that exceeds $50 million. The declining enrollment had hit 4000 students. Today it is at 7000 with a “very aggressive on-line adult education program. This school is now run like a business,” D’Antoni explains. But he is quick to credit the president with the success. “I really just encouraged him,” he adds.

He was equally successful in his United Way endeavors. In 1997 he led his community campaign that finished with a generous $43 million. “Franklin County (home of Ashland) always has one of the highest per capita United Way campaigns of anywhere in the country,” D’Antoni explains. It is the home of American Electric Power, Ohio State University, Chase Bank, Nationwide Insurance, in addition to Ashland.

D’Antoni and his wife Sue Ann whom he met on a blind date 39 years ago now divide their time between their primary home in Naples, Fla., and their long time location of Columbus, Ohio. Not coincidentally, the Brothers do the same. And as a final twist to the D’Antoni-Brothers relationships, David successfully nominated Fred for membership in Virginia Tech’s Academy of Engineering Excellence in 2003; this time it was Fred returning the favor and nominating David into the Academy.

The D’Antonis have two children, Jennifer and Andrew.
When John F. Kennedy informed the world that the U.S. should have a man on the moon before the end of the 1960s, he probably had no idea how many young lives he was impacting.

And most certainly Kennedy was not thinking of a community called Uttar Pradesh. However, his words that day would have a special bearing on this northern state in India, more than 8000 miles away, where Alok Das was a teenager. Once Das learned of the challenge to NASA, his own enthusiasm for space exploration never waned.

Some 50 years have now passed since Das first started dreaming about space travel. Today, Das, who became a U.S. citizen, has to his credit “ground breaking achievements (working for the U.S. Air Force) that have helped resolve urgent warfighter needs, create game changing prototypes of future Department of Defense (DoD) systems, and advance critical air, space, and cyber technologies,” said Terry Alfriend, the Tees Research Professor at Texas A&M.

Das, a pioneer in the development of smart space structures, has evolved “new critical technologies and created novel concepts for space systems,” Alfriend added. These include: a standard to isolate vibrations that is used now on multiple launch vehicles; the co-invention of Smart Velcro, providing a novel way for high-precision, low cost docking of spacecraft in the micro gravity environment; and a solar sail that reduces weight and cost by a factor of five yet provides more than 100 kilowatts of power for certain Air Force vehicles.

Das, described as a key change agent for the Air Force, has broken through multiple layers of bureaucracy in his position. Since he is often the go-to person to respond to the highest priority needs of the U.S. combat forces, a number of years ago Das led a business process reengineering team to develop a rapid reaction process to enable the Air Force to urgently respond to such needs.

Using this process he and his team were able to solve a long-standing, often deadly issue of how to land helicopters in a desert environment. The problem was when a helicopter neared its landing point, the rotors would kick up dust, essentially blinding the pilots and crew. According to Das, “pilots expressed the problem as akin to closing your eyes and trying to maintain your balance on top of a basketball.” In seven months his team developed a solution using inexpensive synthetic vision capability with high-resolution night imagers and video game visualization technology, on these dust makers.

Immediately after this success, he and his rapid reaction process team developed and tested a small back-packable air vehicle which could locate, track, and engage high-value fleeting targets with surgical precision for the on-going global war on terrorism. “Essentially it was a guided bullet operated by a single soldier in the field,” Das explained. Within seven months Das had another prototype completed. Other successes have followed suit.

Each day as Das enters the gates to Wright Paterson Air Force Base of Dayton, Ohio, where he now serves as senior scientist for design innovation his excitement remains apparent. “The Air Force has given me the ultimate job,” smiled Das, now entering his fourth decade working with the agency.

Das came from an engineering family. His father conducted the work of a traditional civil engineer, working on the design and building of dams and bridges. As a boy, Das had a truly cosmopolitan upbringing, attending a British style boarding school in the foothills of the Himalayas but run by Irish missionaries. Upon graduation he attended the Indian Institute of Science in Bangalore, India, basically a small elite graduate school with only three undergraduate departments. Das entered as one of only 80 total students in the freshman class.

The curriculum was designed to move quickly. Das earned his undergraduate degree in electronics and communications engineering in three years and within five years of starting, had his master’s degree in aeronautical engineering. Graduating as the number one student in his class, the Indian Space Research Organization quickly brought him on board as an engineer to design attitude control systems for some of India’s initial earth observation satellites.

His two-year stint at this organization made him realize he “wanted to learn more.” So he applied to a half a dozen schools, and opted to attend Virginia Tech. Ironically, the man who was revolving his career around space travel experienced his first true airplane ride, not exactly a smooth non-stop from New Delhi, India to Blacksburg, Virginia. He admitted he was once given an earlier ride while in college in what he called a “toy aircraft” where the cars below him moved faster than the plane. That ride was supposed to provide him with a sense of aerodynamics, but mostly, it made him feel woozy, he laughed.

The irony of Das studying at the Blacksburg campus was his landing as a doctoral student of Henry C. Kelly, the Christopher C. Kraft Professor of Aerospace Engineering. Kraft was the person who gulped a few times when Kennedy announced intentions to have U.S. astronauts land on the moon. It fell to Kraft, a 1944 aerospace graduate of Virginia Tech, to lead the operational planning for this U.S. NASA mission.

When Kraft later recalled this challenge for a magazine article for Virginia Tech, he said, “With all due respect to the memory of John F. Kennedy, I must tell you that I thought the man had taken leave of his senses. We had never even placed a man in orbit. And yet, here in

Alok Das
Aerospace Engineering, Class of 1982, Ph.D.
front of television cameras beaming his message all over the world was the President of the United States committing us to a lunar landing.”

Obviously, Kraft’s first take on Kennedy’s speech was a bit different from Das’.

As the Kraft Professor, Kelly had pioneered a way to improve the sequencing of successively improved trajectories, having a profound impact on the U.S. space program.

“It was great to work for such a brilliant and nice man,” Das said. “He treated us all like equals, often inviting us to his home…I was driven by what he wanted us to do. Time was not a determining factor. He would say, ‘Try this, try that.’ My training was very mathematical.” In two years, Das earned his doctorate, saying, “I had no other life. I just worked.”

Just before graduation, Kelly paid a surprise visit to Das at his austere basement office in Randolph Hall. Kelly asked Das to go home and change out of his T-shirt and to return to meet an Air Force captain named Bob Preston. Preston was looking for a person with a dynamics and control background, fitting Das’ resume. Kelly had also highly recommended Das to Preston. But since Das was still a foreign national at the time, Virginia Tech had to facilitate the interview and his subsequent hiring.

So he became a Virginia Tech research associate placed at Edwards Air Force Base in California, and his green card was issued in 1983. Then the Air Force could hire him as a civil servant in July of 1984. Immigration laws forced him to wait five years to apply for his U.S. citizenship, an action he pursued aggressively. “President Reagan had announced Star Wars, and there were things I could not see” in the labs, Das acknowledged. “Our lab was heavily involved …and I wanted to jump in.” So in 1989, along with some 5000 people at the Los Angeles Convention Center, a judge performed a mass swearing in of the new group of U.S. citizens, including Das.

That same year he started splitting his time between Edwards and the Phillips Laboratory at the Kirkland, New Mexico Air Force Base. He, his wife, and son eventually moved to Albuquerque in 1993. Projects started leapfrogging. In 1994 he was part of a revolutionary NASA program that demonstrated the potential of small spacecraft to greatly reduce the cost of future civil space missions. In 1995 he led the DoD participation in the formation and implementation of the NASA New Millennium Program, pioneering NASA’s vision of frequent, affordable, capable scientific missions in the 21st Century. Since the fall of 1997 Das has been exploring the potential of using small- and micro- satellites to perform future DoD missions. He played a pivotal role in the development of TechSat21, described by the Air Force’s chief scientist as having the “potential of dramatically impacting future warfighting capability.”

In 1998 Das created and led the Innovative Concepts Group, creating many of the Air Force’s high-visibility, multi agency transformational space concepts such as TechSat21 and XSS-11. In the last decade, Das has spearheaded the development of a technology investment strategy for the DoD’s $15 billion transformational communications program, a critical component of net-centric warfare. He led the definition of the TacSat-2, the Air Force’s premier experiment to enable the use of small satellites for tactical operations. He was a member of NASA’s $300 million Aerospace Technology Enterprise review committee on pioneer revolutionary technology, the incubator for revolutionary technologies for future NASA missions.

Das is a Fellow of the American Institute of Aeronautics and Astronautics and of the Air Force Research Laboratory. The International Society for Optics and Photonics awarded him its Smart Structures and Materials Achievement Award in 2004 and in 2012 he won the Distinguished Presidential Rank Award.
John DeBell believes in the value of volunteering. And his efforts on behalf of his profession have had positive ramifications throughout his professional career as well as with his alma mater, Virginia Tech. Various groups have bestowed awards and honors upon the civil engineer, one of the most recent being the Virginia Tech College of Engineering Distinguished Service Award for 2006.

More than 25 years ago, Paul Torgersen, Virginia Tech’s dean of engineering from 1970 until 1990, met DeBell through his leadership role with the Virginia Society of Professional Engineers (VSPE). At that time, DeBell was soliciting support from all of the Commonwealth’s engineering deans to encourage their undergraduates to obtain their professional licenses.

Torgersen seized the meeting as an opportunity to request DeBell’s advice on a more regular basis and asked him to join the college’s advisory board. DeBell became one of the earlier members of this group, and was also made one of the first members of the college’s prestigious Committee of 100, a group of engineering alumni who have achieved outstanding professional success.

“Early on, I recognized in John his capacity for leadership, and his devotion to his alma mater,” Torgersen says. “Now, for almost three decades, I have witnessed his continual support of Virginia Tech and the College of Engineering. He and his wife Connie truly reflect the spirit of Ut Prosim.”

Since the 1980s, DeBell has rotated on and off the college’s board, including a stint as its chair in 2001. He has also served on the Via Department of Civil and Environmental Engineering’s Advisory Board, including its chairmanship. “John DeBell has been a wonderful friend and dedicated supporter of the Via Department of Civil and Environmental Engineering for many years. In my role as Department Head I have called upon John for help in many situations, and he has always been quick to respond and help in whatever way that he could. We are truly fortunate to have such a dedicated alum as John,” says William Knocke, department head.

DeBell has worked towards improving space needs for the college and computing facilities for the department, and he has often found himself as a lobbyist on behalf of higher education. Simultaneously he co-founded his own company, enjoyed its success, and eventually sold the operation to Burgess & Niple, Inc., remaining today as the Regional Manager of its Mid-Atlantic operations.

DeBell’s story starts as a hometown boy who returned to his roots after his graduation from Virginia Tech in 1968 as a civil engineer and a 16-month stint in Vietnam. During the War, he was a flight operations specialist, and will only modestly say that he won a few medals. When his service ended in 1970, he returned to Centreville, Va., to his parents’
home. He soon landed a position with Dewberry and Davis, a
well-respected consulting firm.

After four years, DeBell and his boss at Dewberry, Paul
Bengtson, decided to branch out on their own. “I was a small
player in a big machine,” DeBell reflects. “Paul, on the other
hand, was an associate with the firm and very secure. But we
both had a burning desire to make it on our own.”

At the time, DeBell was a newly-wed so his wife Connie
managed the books “when we had books to do,” he smiles.
They lived with John’s parents for the first few years of their
marriage. And his parents also helped them with the business
location; they rented two rooms in a house his parents owned
in a commercial area. Whenever Bengtson and DeBell landed
a job during the early months of their new enterprise, they
would also have to find the resources to get it done.

They focused on water and sewer projects and one almost
got DeBell mauled. “When we tested sewer systems, we
placed meters inside the manhole covers to measure the flow.
Readings were taken every four hours,” DeBell recalls.

Well, in Shenandoah National Park, DeBell was not the
only one who was interested in the manhole covers. “Bears
eat out of the sewers, and while I was checking on one, I
happened to disturb him.” As the bear came lumbering after
him, DeBell jumped back into his vehicle. However, like the
mailman who works through rain and sleet and snow, DeBell
still got the job done.

And his reputation gained prominence. For the first five
or six years after they started Bengtson and DeBell, the busi-
ness doubled every year. After two years, they added another
partner, John Elkin, who had technical expertise in survey-
ing. In 1978, Terry Titus joined as a fourth partner. When the
business was five years old in 1979, they had grown to 50
people. By 1987 they had some 300 employees. In the late-
1990s, Burgess and Niple, Inc. assumed 100 percent of the
company’s stock. DeBell stayed on as an owner, and remained
as the Director of the Mid-Atlantic region. He also serves on
its Board of Directors.

Last year, Burgess and Niple ranked 77th among the top
500 architectural and engineering firms in the country as com-
piled annually by the Engineering News Record magazine.
DeBell believes that with internal growth and some additional
acquisitions, Burgess and Niple will succeed with its strategic
growth goals.

During his career, DeBell has worked on a variety of
projects, including ones for VDOT, Dominion Power, the
National Park Service, Fairfax County agencies, federal
agencies, and a host of others. He has also been involved in a
number of developments as an owner.

Along the way, he also made time to serve on a number
of professional committees. Among his positions with the
National Society of Professional Engineers (NSPE), he was a
national director (1988–92) and a member of the Professional
Engineers in Private Practice Board of Governors (1986–88).

With the VSPE, DeBell served as state president in 1983. He
earned VSPE’s Young Engineer of the Year Award in 1975,
its Outstanding Service Award in 1978 and again in 1982, its
Distinguished Service Award in 1983, and its Engineer of the
Year Award in 1988.

DeBell was a founder of the Engineers & Surveyors
Institute (ESI), a public-private partnership that offers practi-
cal curriculum to students, most of whom are employed by
engineering firms. He served as its president in 1992.

And not forgetting his roots, he served as the President of
the Historic Centreville Society and on its Board of Directors.

At Virginia Tech, DeBell is a member of the Academy
of Distinguished Alumni for the Department of Civil and
Environmental Engineering, and the President’s Circle of the
Ut Prosim Society. He currently serves as Chair of the Board
of Directors of the Virginia Tech Foundation, Inc. In 2002, he
received an honorary membership in the Virginia Tech Civil
Engineering Chi Epsilon Honorary Society.

DeBell and his wife Connie have two sons, John Jr., a
graduate of Virginia Tech’s tourism and hospitality manage-
ment program and a degree in interior design from Mary-
mount, and Richard, a geography graduate of Radford Univer-
sity with his masters in geography and cardiographic sciences
from George Mason University.
Nicholas H. Des Champs
Mechanical Engineering
Class of 1962, BS; Class of 1967, Ph.D.

With the energy recovery products that Nick Des Champs’ entrepreneurial company has placed in the international field, the Virginia Tech mechanical engineering alumnus estimates “a worldwide savings of 6,500 barrels of oil a day.” Since his products have a lifetime of up to 30 years, the number of barrels saved could double in five years to some 13,000.

If the conservative number of the cost of $70 for a barrel of oil were to be used, the yearly savings becomes more than $332 million, not to mention the reduction in dependence on this fuel source.

Not bad bragging rights for a boy who spent his first year after high school mixing mortar and laying bricks for his father, an entrepreneur in his own right who had only finished eighth grade. “My father was a very motivated, very bright man who did not have the opportunities I had,” Dr. Des Champs says. The middle child of three sons who attended Douglas Freeman High School in Henrico County, Va., he became the first member of his family to receive a college degree.

His opportunities for higher education arose because Dr. Des Champs saved the money he made working with his dad, and he landed a co-op job with Ford Motor Company in Dearborn, Mich., for seven academic quarters. When he graduated as a member of the Class of 1961, he went to work for Atlantic Research Corporation (ARC), making just a little more than the $2.50 an hour his father had paid him as a mason. “Dad let me know that too,” he laughs today.

However, new challenges quickly presented themselves. At ARC, he was tasked with figuring out how to help the U.S. Marine Corps build makeshift runways to land military aircraft in combat zones. He devised an “anchoring device” that provided the jet with a stable landing area, and in doing so, earned his first of 19 patents in 1962.

Dr. Des Champs discovered he had a skill for solving problems, and his intellectual curiosity led him back to Virginia Tech to pursue his graduate degrees. Eventually, J.B. Jones became his major professor, a man Dr. Des Champs describes as “unbelievably precise, an excellent teacher, and my mentor.” When he was presented with his doctoral degree in 1967, Dr. Des Champs and his classmate, Frank Bliss, made history as the first Ph.D.s in ME to graduate from Virginia Tech.

His next stop was an engineering firm in New Hampshire called Sander Associates where he spent four years as an engineering manager. His skills in heat transfer were tested as he worked on projects as
varied as the re-entry of orbiting spacecraft into the Earth's atmosphere to artificial heart development.

"When I look at all of the forks in the road, it's amazing," Dr. Des Champs recalls. “The job with Sanders was exciting, and it led to my next opportunity. I had come up with a way to effectively cool submarine detection devices and in order to make sure I was not infringing on another patent, I went to Donbar Development Corporation in New York City to confer with them. At the meeting, they said they liked how I presented myself and they felt that my heat transfer background would fit in well with their company's goals, so they offered me a job at twice my (then) current salary.”

Since Donbar’s focus was patent development, Dr. Des Champs was in heaven. His job was to travel the world investigating ideas and negotiate their purchases. Donbar would further develop the concepts and then resell them to industry when they proved to be valuable. For four years, Dr. Des Champs prospered with Donbar until the recession of the 1970s struck. But again, the fork in the road proved fortuitous. Since Donbar now owed him back pay, he was able to negotiate the right to perform a $100,000 Air Force contract originally intended to be performed by Donbar. The work he performed on the air-to-air heat exchanger for the F15 fighter jet allowed him to follow his father’s entrepreneurial ways, and open Des Champs Technologies in 1974 in the middle of the oil crisis and a deep recession.

“We took the technology we developed under the Air Force contract and applied it to the heating, ventilation and air conditioning (HVAC) industry,” Dr. Des Champs says. His timing was perfect as the oil crisis caused energy prices to soar, and Des Champs Technologies was offering cost effective HVAC systems.

In the late 1980s when energy conservation was no longer in vogue, Dr. Des Champs made two timely decisions. He moved his company from New Jersey back to his less costly home state of Virginia, settling in Buena Vista. And the tech savvy engineer developed the Wringer®, the first product in the field that allowed the control of humidity inside a building without overcooling it and simultaneously reducing the cost of dehumidification by more than 30 percent. The Wringer® was named Plant Engineering magazine's product of the year in 1992.

The need for the Wringer® was a result of the energy crisis in the 1970s when architects started designing very tight, often windowless buildings. Their occupants soon started to complain of poor ventilation, and the term “sick building syndrome” was identified as a major health hazard for the occupants. The Wringer® solved this problem and allowed Des Champs Technologies to move from a $7 million a year operation to some $30 million in an eight-year period. “Our technology was copied by just about every manufacturer out there,” Dr. Des Champs says.

In running his business through four very different decades, Dr. Des Champs’ company survived four recessions, and managed to build the most respected and largest firm in the energy recovery field. When he sold it to Munters Corporation, a billion-dollar-a-year business located in Stockholm, Sweden, in 2007, he remained as the executive vice-president of its dehumidification division until July 2009.

Today, he continues to act as a consultant for the company, through his ownership of eForay Consulting LLC of Las Vegas. “We remain the most profitable, shining light of Munters,” he says. At the end of 2008, sales of the Des Champs Products Division were at $50 million for the 225-employee company.

His successes secured him the honor of Master Entrepreneur of the Year in 1997 for the states of Maryland, Delaware, and Virginia from the Master Entrepreneur Council. The American Society of Heating, Refrigerating and Air Conditioning Engineers named him a Fellow for his accomplishments in the development and promotion of air-to-air energy recovery and indirect evaporative cooling.

He also has earned a number of accolades with his alma mater during the years. When Dr. Des Champs returned to Virginia in 1989, he renewed his involvement with the ME department, helping to found its Advisory Board in 1997. He has employed Virginia Tech co-op students and financed research projects. He and his wife, Becky, have hosted Virginia Tech alumni events in their home, and they are members of Ut Prosim and the Committee of 100. He also served a four-year stint on the College of Engineering’s Advisory Board.

The couple continue to reside in Fincastle and maintain their permanent residence in Las Vegas. They have been married for 45 years and have a married daughter, Nikki, living in Richmond, Va., who has given them two grandchildren, Nicole and Ryan, and a son, Doug, living in Charlotte, N.C., who is a graphic designer.
Major General Daniel M. Dick

Industrial Engineering, Class of 1970, BS

Major General Dan Dick has never been a practicing engineer, but has always thought of himself as “an engineer who found flying fighters a lot of fun.”

Engineers have a methodical mindset, make decisions based on facts, and understand the big picture, said the general, currently an independent defense consultant to Fortune 500 companies. His industrial engineering training and engineering aptitude have served him well in leadership roles.

His biggest leadership challenge began on the night of June 25, 1996, when terrorists attacked the U.S. Air Force housing complex of Khobar Towers, located in the eastern providence of Saudi Arabia. A truck rigged with some 20,000 pounds of explosives had been parked adjacent to the eight-story building and detonated. At the time of the explosion, the Air Force general was on the final leg of his trip from the U.S. to take command in the Persian Gulf the next morning.

“I was supposed to have taken command the morning of the bombing, but my flight was delayed by one day. When I arrived at 0500 on June 26th, it was a horrible scene. Recovery and identification of the dead and wounded were still underway. Tragically, 19 airmen were killed and about 500 others were injured – many very seriously. Sadly, the safe host nation security situation our forces had grown to know while inhabiting the Persian Gulf countries changed that day,” the general recalled.

Almost immediately, he was asked by his superiors to utilize his engineering knowledge to plan, layout, and build an airbase around an abandoned runway in the middle of the Saudi Arabian desert for about 5,000 air force personnel and 100 aircraft displaced by the attack. The general quickly formulated his plan and within 45 days after the attack, Prince Sultan Air Base was built. “My industrial engineering education from Virginia Tech was put to good use. It was an extremely hectic 45 days as we laid out and built an entire airbase at the same time. During the day, we would figure out the best laydown for a part of the base, such as the aircraft maintenance complex, and then at night, our great civil engineers would erect canvas hangers and aircraft maintenance facilities. Every morning you would wake to new facilities that weren’t there the day before. And the construction took place while the wing continued to enforce the no fly zone over southern Iraq,” said the retired command fighter pilot.

His love of flying started as a youngster when he was growing up in central Ohio where his father taught him the ropes of farming and passed down his enthusiasm for aviation.

“My dad was taking flying lessons when my mom became pregnant with my older sister. Mom made dad quit the lessons because she thought flying was dangerous. Years later when I was a teenager, my father and I were on our way to work on the farm when a small airplane flew over us. Dad asked if I was interested in learning...
how to fly. I said, 'yes,' and we immediately headed over to (visit) his friend, Mr. Ostrander, a flying instructor who owned a little grass strip and a piper cub plane. I probably didn’t chat with Mr. Ostrander more than 10 minutes before we were taxiing out for my first flying lesson. From then on I was hooked, much to my mother’s displeasure,” said the general. He used his paper route money to pay for the lessons.

Even though his mother continued to express her aversion to flying, her only son pursued his pilot’s license, finally obtaining it at the Virginia Tech airport during his senior year through the air force pilot instruction program.

During his senior year in high school, the future general was accepted to Virginia Tech, “an easy decision.” His best friend’s father and his two older brothers had attended Tech – the father, an electrical engineer, was the president of the General Electric plant in their home town, and his oldest brother was an industrial engineer.

Upon Dick’s arrival in Blacksburg, he enrolled in general engineering courses and soon gravitated towards the industrial engineering discipline. He was a member of the Corps of Cadets and found a home in the Air Force branch of ROTC, at a time when the Vietnam War was raging. In December of 1969, during his junior year, the U.S. Selective Service System held its lottery by birthday drawing, determining the draft future of some 850,000 eligible young men.

“I remember the night of my draft lottery like it was last week. My S Squadron classmates and I had settled into a dorm room to listen to the draft number birthdays being called out on the radio. I had just sat down when I heard July 12th – my birthday. My draft number was 15, so I knew I was headed into the service after graduation,” the general recalled.

But before he graduated, Dick had joined the German Club and at one of its parties his junior year, he met his wife, Lynn. They married soon after graduation and took their honeymoon while in route to Lubbock, Texas, where he was stationed for pilot training.

In the fall of 1970 he was called into active duty and in the following three decades the general and his family would live all over the U.S., Europe, and the South Pacific. He served as the 13th Air Force commander, responsible for all Air Force operations in a 32-country area.

In the early 1980s, the general completed the program at Air Command and Staff College. He also earned a degree at the National War College. The general was one of the elite 160 servicemen and women accepted for the year-long course; 40 of which were from the Air Force branch.

The general’s son, Bryan, followed in his father’s footsteps in more than one way. He is now an Air Force major and F-22 fighter pilot. He is a graduate of the Air Force ROTC program and has a civil engineering degree, but from “that other Virginia school.” Just the same, he is extremely proud of his son’s choices and accomplishments.

After serving some 33 plus years, the seasoned general retired from the Air Force. With an extensive educational background, combined with a plethora of worldly experiences and a successful track record in leadership roles, he has been sought after in the private sector. In 2003, he was made the director of strategic initiatives and business development for joint, transformational, and U.S. Air Force programs for General Dynamics. And in 2006, the general served as the vice president for business development for L-3 Communications, responsible for the technical and management services division’s $300 million Air Force account.

Since 2008, as the owner of Dan Dick Consulting, LLC, he has been operating independently as a defense consultant for small businesses and large Fortune 500 companies such as Lockheed Martin, Boeing, EADS, and Embraer.

The entrepreneur has also served on the board of directors and chairman of the government security committee of Rolls-Royce Goodrich Engine Control Systems, LLC, and as an outside director and chairman of the government security committee of Cardno TEC, Inc., a mid-sized environmental engineering firm.

In the late 1990s he was unable to accept an invitation to become a member of Virginia Tech’s industrial and systems engineering advisory board due to his demanding Air Force schedule and pending overseas assignment. But several years later, once back in Virginia, he wrote the ISE department and asked to be considered again whenever they had a vacant board position. He became a board member serving a five-year term from 2001 – 2006. Later in 2008, the general was selected for the department’s Marvin H. Agree Distinguished Alumni Award.

Still as committed than ever to his alma mater, the enthusiastic Hokie is a football season ticket holder and often visits his old stomping grounds.

“He continues to make time to support and serve others as he has done through service on my advisory board in the (industrial engineering) department. I have known a lot of people in my life, but can’t think of anybody that is a better all-around human being than Dan Dick,” said Don Taylor, department head.
As a young boy growing up in the late 1930s and 1940s, Tom Digges was the son of two highly educated parents for the times. His mother, Dorothy Hottel Digges, a biology graduate of George Washington University, was a bacteriologist for the Mount Alto Veterans Hospital in Washington, D.C. His father, Thomas Goodwin Digges who attended Virginia Tech, left in the middle of his college career to serve in World War I, where he attained the rank of captain, and returned to acquire a physics degree, also from George Washington.

The Digges never doubted that both Tom and his brother, Robert, would go to college. What his parents may not have realized was that Tom would end up with four degrees: bachelor degrees in French from the University of Virginia and in metallurgical engineering from Virginia Tech; a master’s in metallurgical engineering from the University of Tennessee, and a doctorate in metallurgy and materials science from Lehigh University.

Tom and his brother started out living in the northern Virginia community of McLean, Va., on an 18-acre farm that still remains in the family. He was one of about 20 students in his classes, which at that time were combined for the first and second grades, then third and fourth, and finally fifth and sixth — a striking contrast to today’s school population in Northern Virginia.

High school was a different story. He attended Western High School in Washington, D.C. Most of its graduates went to Ivy League colleges. Each morning, Tom’s father chauffeured him to school on his way to work at the National Institute of Standards and Technology.

Early on, Tom leaned towards a medical career, hence his first round choice of college at the University of Virginia where he enrolled in pre-med and French. He concentrated on science courses, subjects most pre-med students steered clear of, according to his recollection. But when he entered a bacteriology class, he found the material “really did not make sense” to him and he left U.Va. with only a French diploma.

His father intervened, contacting his friend Walter Newman, the president of Virginia Tech from 1947 until 1962. Newman recommended that the bi-linguist and Eagle Scout should pursue a second degree in engineering with his solid science background. Also, in high school Tom had exhibited some engineering skills, building a crystal radio set, and ironically crystals would eventually become his path to a lucrative career.

At 23 he started Virginia Tech as a junior. He suffered one more hiccup in his academic life, going on academic probation as he “fished around” for his true vocation. But the minor setback caused him to bounce back strongly. He graduated with an immediate job offer from Newport News Shipbuilding in 1960.

The feared father of the nuclear Navy, Admiral Hyman Rickover, was the man in charge at the time. Mr. Digges says, “I considered myself a flunkie at the shipyard, and I was in a dead-end job. Most of the work consisted of making professional drawings on welding procedures prepared by senior engineers for nuclear reactors.” So, Mr. Digges applied to the
University of Tennessee to pursue a master's degree. His master's thesis was on “abnormal steel,” a research path his accomplished father, named one of NIST's Distinguished Scientists, had also pursued in research.

Upon his third graduation, he received several employment offers from aerospace companies in California as well as the Naval Research Laboratory (NRL). He selected the latter even though the salary was only $6000 a year, only two thirds of what the private industry offers were. “It was a better job, with more research and development, and I would be growing my own crystals of refractory metals. I built a double crystal x-ray diffractometer to measure crystal perfection and grew niobium single crystals by two different methods,” he recalls.

The NRL position led Mr. Digges to pursue a doctorate, and he received a National Science Foundation Fellowship to attend Lehigh University. “In the 1960s, engineers were kings,” he says, and he worked with Richard Tauber, one of the best in the semiconductor industry at Lehigh, from 1966 thru 1968. Mr. Digges managed to author three unique publications from his thesis, even receiving desired critiques on the papers from his then retired father. “My parents were always with me on everything I did. Not everyone is blessed as I was,” he says.

Following his fourth and final graduation, he moved to the Lone Star State to work at Texas Instruments, a company that employed the famous Jack Kilby who led a team that invented the first handheld calculator showcasing the integrated circuit. As with Rickover, Dr. Digges found himself associated with people who worked with this icon in the field, and he was chief engineer among the researchers who were the first to use computers to control silicon crystal growth in 1969. In 1972 he developed the silicon vacuum float zone technology pilot line for producing high resistivity silicon to serve as sensor material. For the 1974 Skylab Crystal growth experiment, Dr. Digges personally prepared the germanium crystal and successfully instructed the astronaut how to make furnace temperature changes.

While at TI, he met his wife of more than four decades, Lana Ingram, an accomplished woman with a master’s degree in mathematics and who worked in design automation.

His experience at TI where he was making an annual salary of $16,000, yet the company was grossing $21,000 a month from work he led, triggered his thinking about entrepreneurship. He left TI in 1973, for a short stint with Spectrolab where he was in charge of silicon crystal growth. During the energy crisis in 1974 he was laid off. Mr. Digges and his wife thought about starting their own business, but there was inadequate preparation time. Within two months he received an offer from the Jet Propulsion Laboratory (JPL).

By late 1977 the time was right for Tom and Lana to start their own semiconductor company. Robert wanted Tom to move to Virginia and promised to fund the company. For the actual manufacturing building plan, the Digges brothers worked with a Northern Virginia architect. Tom prepared by producing schematics of the electrical and lighting systems in conjunction with a JPL facility engineer. For the water system, he made schematics with a Wacker chemitronics engineer.

The Digges sold their house and headed for Virginia. Upon their arrival, they discovered Robert required a back operation, incapacitating him for six to nine months. Tom had to take on the role of supervisor of the manufacturing facility. With Lana by his side, Tom drew no salary in the beginning, and they constructed and assembled furnaces for the nine months prior to producing the first silicon crystal as well as finishing the building that housed the manufacturing facility.

Dr. Digges, the holder of 10 patents, four trade secrets disclosures and greater than 30 refereed technical publications, says, “Technically, I knew we could do this. Making crystals is an art and a science. My problem was I am hard-headed, and did not appreciate good business practices,” he adds. But with his sibling’s business prowess, they made their first crystal, and started selling to companies like TI and Western Electric.

Over time, Tom increased his business skills. One of Tom’s attributes is his ability to network with his peers in the technology world. He has received technical help on crystallography, resistivity measurements, silicon etching and fracture, surface morphology, clean room technology, rf heating and micro fabrication. This enabled Virginia Semiconductor Inc., to produce state-of-the-art crystals with a low overhead.

From 1986 to 1996, the company’s averaged growth rate increased at more than 20 percent per year. In 1991, Virginia Semiconductor won the “Photonic Spectra Circle of Excellence” award for the introduction of the two to four-micron thick wafer, judged as one of the year’s 25 most significant technical developments in the photonics field. The company also won the prestigious Blue Chip Award given by U.S. Chamber of Commerce and Connecticut Mutual, judged as the best small business in the state of Virginia in overcoming adversity.

Tom and Lana attended many trade missions as Virginia delegates led by the various governors to Europe, Asia, Israel and South America. In 1994, the company received the Virginia District Export Council Merit Award for increasing its export business from 20 percent of sales in 1986 to 40 percent of sales in 1993.

Their son, Thomas G. Digges III, is president of the company today while his father remains the chief executive officer. “He is doing a good job. We started making two-inch wafers, and we are now custom-making six-inch wafers. We became the first company to offer on-line purchase of wafers off the web, now representing some 10 percent of our business due to the ideas and leadership of my son,” Dr. Digges says.

With less daily pressure, the Digges purchased a 37-acre farm on the Potomac River in Westmoreland County. He spends time now planting an assortment of trees and fencing out deer so he can grow a garden that features eggplants to watermelons.

He also finds time now to perform some philanthropic work, traveling to Mississippi four times in four years after Hurricane Katrina struck in 2005. He assisted in relief efforts, chain sawing trees, hanging drywall, and installing doors.

He was appointed by the Governor to serve on the Virginia College Building Authority from 1997 to 2002. The Digges are members of Virginia Tech’s Ut Prosim Society and the Committee of 100, and he is a former member of the College of Engineering Advisory Board from 2007 until 2011.
Dr. Basil C. Doumas
Chemical Engineering
BS, 1954; MS, 1955; Ph.D., 1960

Basil C. “Bill” Doumas spent much of his youth in his family’s basement with a chemistry set, “mixing this and that” and “stinking up” the house, much to his parents’ chagrin. But his childhood inquisitiveness set the stage for a 34-year career with The Dow Chemical Company and a Presidency of the American Institute of Chemical Engineers (AIChE).

Doumas, the son of a Greek immigrant who owned a restaurant in Fredericksburg, Va., became a Virginia Tech Hokie in 1950 at the early age of 16 years and nine months. His youthful start was because his school system in Fredericksburg operated on an 11-year cycle without the eighth grade. So the youngster had an immediate wake-up call about the demands of college academics when he arrived at VPI, as it was then called, as a member of the ROTC.

“I had to figure very quickly how to effectively and efficiently use my time. ROTC provided me with good discipline that I did not have in high school, but I had no burning desire to remain in the military,” he recalls. So, after two years, he joined the ranks of the civilian student body.

Like most chemical engineering (ChE) juniors, he remembers the experience of the Unit Operations lab as the most grueling, with many sleepless nights dedicated to report writing after a full day of conducting experiments with a team of peers. And during his senior year in 1954, when all ChE students were required to write a thesis to complete work for the undergraduate degree, he found himself doing a literature search, conducting experimental work and, finally, writing up the thesis. “I found the idea of research challenging and satisfying,” Doumas adds.

So, following his graduation in a group of only 17 ChE classmates, Doumas decided to remain at Virginia Tech for a graduate degree. He was spurned on in his decision by recruiters who told him he was “too young” at 20+ for a career position in ChE. He dual-registered in the spring quarter of his senior year for graduate classes, and had no trouble completing the master’s degree for his second diploma in 1955.

Advised by Professor Nelson F. Murphy, and supported by his parents and a Virginia Engineering Experiment Station Fellowship of $100 a month, he worked on a process to prepare lead chromate (a yellow pigment) using different forms of electrical current. Afterwards, Doumas’ adviser wrote two papers on the innovative approaches of his young researcher.

So, at 21, he was now considered old enough to get a job, and he spent the next two years at the National Lead Company of Ohio, a government contractor that operated a uranium processing plant. Doumas worked in a group whose responsibility it was to develop processes to recover uranium from scrap materials. They worked with scrap materials produced in other processing systems at the refinery. The recovered uranium was recycled to a subsequent process at the plant site, thereby keeping the valuable uranium in the production stream.

Throughout his time in Ohio, Doumas remained in contact with Murphy, and after two years, decided to return to Virginia Tech to obtain his doctorate. He was now traveling in threes, bringing his wife, Ann, and their first born, Mark. Allied Chemical and Dye Corporation provided the young husband with a two-year scholarship at $2,000 a year. Ann, a biologist, worked in Virginia Tech’s Agriculture College until she gave birth in 1959 to their first daughter, Jennifer. When the couple found a local family to take care of their children, Ann returned to work until her husband earned his last sheepskin in 1960.

The family decided to move to Lake Jackson, Texas where Doumas started his three-plus decade career with The Dow Chemical Company located in Freeport, Texas. He held various management and technical positions, including: technical manager of Styrene Monomers Technology Center, Freeport Texas; manager of manufacturing and engineering for Dow Chemical Japan Limited in Tokyo, Japan; and an assignment on a new styrene project in Caracas, Venezuela. By the 1970s, Doumas was monitoring Dow Chemical’s 11 styrene manufacturing sites around the world. The Styrene Technology Center surveyed and reviewed what the individual plants did to enhance productivity. Then, every 18 months, a conference was hosted at the Freeport Technology Center where ideas were shared for the improvement of operations in the worldwide units. “We cross-fertilized ideas across the international plants,” Doumas explains. “This was my most rewarding work, seeing various improvements in plant design and plant operations. To implement a plant improvement from Holland or Australia, for example, and cross pollinate with another plant was exciting.”

In 1979, Doumas took a Dow position in Tokyo. “That was a great assignment,” he smiles. The company in Japan operated with a Western style of management. He did not find the cultural differences to be a problem even though most of the employees in his group were Japanese. Ann and their second daughter, Beth, spent the three years with him, with Ann working as a substitute teacher in the international school where Beth attended.

After a little more than three years, the Doumas family returned to Texas, and Bill continued to work in the area of styrene monomers technology. Eventually, he took an assignment with Dow Chemical in Venezuela to help build a new styrene plant. Dow Chemical was leading the joint project, cooperating with private venture capital in Venezuela and petroleum investments by the government. Disagreement among the partners saw the project collapse and Bill and Ann returned to Freeport in 1992 after two years in South America. He remained with Dow for another two years until his retirement in 1994.

Throughout his career with Dow, Doumas was active in the AIChE, culminating in his presidency of the institute in 1996. Even though he was retired, Dow Chemical continued to support him in his travels as president and as past president in 1997. In 2005 AIChE presented its FJ and Dorothy Van Antwerpen Award for service to the institute to Doumas for his outstanding contributions to the chemical engineering profession. Dow Chemical sponsors this award.

His retirement also brought him back to his roots, returning to Fredericksburg, Va., to live in 1995. And the opportunity also arose for him to become active with the Virginia Tech ChE Department Advisory Board. When he returned for a ChE department alumni reunion, he met former ChE Department Head, Bill Conger. Soon after, Conger asked him if he would become a member of the department advisory board. As with any good volunteer, he was almost immediately propelled into the chairmanship of the board, and has remained in this position for several years. He has found it “challenging” as he has now worked with three ChE department heads, and he has a huge goal for the future: to see the ChE department have an up-to-date teaching and research facility since the Randolph Hall facility, nearly 50 years old, has outlived its usefulness.
Grant A. Dove
1951 Electrical Engineering

A native of Virginia, Grant A. Dove was born in a small community called Sycamore. He graduated in electrical engineering from Virginia Tech in 1951.

Mr. Dove’s business achievements are impressive. Currently, he is a Managing Partner at Technology Strategies & Alliances (TS&A), Dallas, Texas. Prior to joining TS&A, he was Chairman and Chief Executive Officer of Microelectronics and Computer Technology Corporation (MCC). MCC is a private research cooperative launched in 1983 to help the U.S. regain its high-tech competitiveness against countries such as Japan and Germany. In this position, Mr. Dove succeeded Bobby Ray Inman, former Director of the National Security Agency and former Deputy Director of the CIA. He is also a former Chairman of the National Security Industrial Association.

Mr. Dove spent the bulk of his professional career with the Dallas-based company Texas Instruments (TI). He is credited with convincing the military to buy the Strike missile, one of TI’s biggest selling weapons of the 1960s. Later, his important projects included the development of computers for use in the oil and gas industry, and the development of the HARM missile. When Mr. Dove retired from TI, he was an Executive Vice President.

At TS&A, Mr. Dove is active in assisting both large and small companies in growth and diversification strategies through alliances as well as merger and acquisition activity. He was a consultant to Lockheed Martin for its commercial telecommunications services strategy and an adviser to Scientific Applications International Corporation for its successful acquisition of Bellcore.

He has also been involved as a founder, investor, and director of a number of companies in the information technology sector. He was a director of several companies that were sold or acquired including Western Company of North America, Control Data Corporation, Net Worth, Net Speed, and Forefront Group. After serving on the U.S. West Board of Directors for 10 years, he joined the Board of Media One Group, a spinout. He retired as Chairman of Optek Technology in 1998, and continues as a Lead Director. He also serves as a Director of Intervoice, Cooper Cameron, Vocal Data, Object Space, Control Systems International, and MCC.

He received the College’s Distinguished Alumnus Award for 1995. He is an active member of the Virginia Tech College of Engineering’s Committee of 100. He has served as a member of the College’s Advisory Board and the Bradley Department of Electrical and Computer Engineering Advisory Board.

Among his hobbies are skiing, fishing, golfing, flying his own aircraft, and boating.

He is married to Peg Dove, and they reside in Dallas, Texas. They have four sons, three daughters-in-law, and six grandchildren. Grant and Peg have spent the past five summers escaping the Dallas heat on their motorsailor, “September Song,” cruising with family and friends in British Columbia, Alaska, and Maine.
At nine, Regina Dugan’s fight was clear. She underwent three major surgeries and more than two years of chemotherapy to beat cancer. She says it forged her spirit. “That was a very hot fire, early in my life,” described Dugan. “It made me stronger, and it changed how I think about risk, living boldly, and fear of failure.”

The years since serve as an illustration of this philosophy. Her current resume now includes the first female to serve as the director of the Defense Advanced Research Projects Agency (DARPA), a government agency with a $3 billion annual budget that she portrayed as “full of dreamers with V-8 engines.”

When Dugan was the DARPA director from July of 2009 until March of 2012, one writer characterized her as “wicked smart” although the New York City native laughingly said she prefers the term “wicked determined.”

In a New York Times article, another journalist spoke of a colleague’s impression on how to prepare for an encounter with Dugan: “There are four stages of Regina Dugan when trying to meet her insistence on thinking in new ways: being a little scared, really scared, frustrated, and then enlightened.”

Dugan admitted she likes to live “with an intensity. I aim to live without regret. But intensity has many facets… I am comfortable in both fast-paced technology development and in quiet moments, with a beautiful piece of music, or a meal well-cooked and shared.” One of her favorite poems is by Kahlil Gibran, “Joy and Sorrow.”

The first member of her family to become an engineer, Dugan credited her parents with instilling the idea that she had limitless opportunities. Often the only woman in a classroom or working on a team project, Dugan said the minority status did not intimidate her, and instead helped lead to her strong belief in the power of “cognitive diversity.”

She was accepted into Virginia Tech’s College of Engineering at a time when the female population hovered around 16 percent. She graduated Summa Cum Laude with her bachelor’s degree in mechanical engineering (ME) in 1984. A year later, she earned her master’s degree, advised by the ME icon J.B. Jones. And she left Virginia Tech for NASA. Why did she opt to join the space agency? “Because it was NASA,” she answered with a slight incredibility at the question. While working at the home of the astronaut-training site, she developed a system for venting gas from a space liquid storage tank and what became her first of several patents.

Her curiosity and sense of adventure led her West to study for her Ph.D. at Caltech. It also meant getting there via the Arctic circle. A 16,000 mile, three-month journey with friends in two Volkswagen camper buses – from Houston through British Columbia, the Yukon, across Alaska, to the Arctic circle, fishing during the salmon run in Valdez and down the West Coast to Caltech. That was a ground-based adventure.

While a graduate student, her sense of discovery extended beyond her study of fluid mechanics to flying – not
fixed wing aircraft – rotary wing. While in California, she learned to fly a helicopter and after numerous lessons, she was ready for her first solo. Scheduled for an early Saturday morning, the nonchalant instructor simply left the keys under the seat. Her petite physique forced her to carry 50 pounds of sandbags as additional ballast to meet the minimum weight requirements for autorotation. “It certainly made the pre-flight amusing,” she said. She soloed safely, and landed as she started, on a quiet tarmac – a tad anticlimactic for a first solo flight.

Two years after she received her doctorate in ME from Cal Tech, she and Jones co-authored “Engineering Thermodynamics.” And graduation from Cal Tech sent her back East to a position as a research staff member at a think tank in D.C. It was the job “everyone told me not to take,” she smiled. “I had discovered that technical training meant that I looked at problems through a certain lens. I felt the need to use those skills in service. As I thought about my options one Saturday morning, I let go of the calculus and simply asked myself... ‘which job would you get up and go to right now? On a Saturday morning. Take that job.’” And she did.

After three years at the think tank, she took a position with DARPA in 1996 as a program manager. Founded in 1958 as a response to the Soviet Union’s launch of Sputnik, DARPA is the principal agency within the Department of Defense for research, development and demonstration of high-risk, high-payoff capabilities for the current and future combat forces. For the next four years, she directed an interdisciplinary team of some 100 researchers of wide-ranging interests, primarily in the creation of several revolutionary technologies for the development of new trace chemical sensors that would detect the explosives in buried landmines.

Science magazine published an article about Dugan and the accomplishments of her program; the article had an unusual title: “Pentagon Agency Thrives on In-Your-Face Science.”

This program took her to war-torn countries such as Mozambique and Bosnia. “It is important to me to experience something,” Dugan said. “You learn different things about a problem when you live it; you understand it in a different way. It becomes deeply personal...and people trust you in a different way.” This belief in “living” a problem meant that she wasn’t content to be an idle spectator, she drove mine-protected vehicles through live mine fields in Mozambique, and while the DARPA Director, she traveled to Afghanistan five times. She goes where the problem is, so as to understand it viscerally.

The agency named her the 1999 DARPA Program Manager of the Year. A few months later she received the Army’s Bronze deFleury Medal. The citation reads, “through strength of will, she carried diseased heart experimenters past points of discouragement and led them to solve seemingly impossible problems. In the highest leadership traditions, she acted as coach, mentor, cheerleader, and taskmaster to achieve the program goals.”

She also led a counterterrorism task force in 1999, and from 2001 until 2003 she was a special adviser to the Army’s vice chief of staff, completing a “Quick Reaction Study on Countermine” for Operation Enduring Freedom. These accomplishments also led to her selection for an Exceptional Service and Award for Outstanding Achievement from the Office of the Secretary of Defense.

After leaving DARPA in 2001, she pursued an entrepreneurial track co-founding Dugan Ventures, a niche investment firm, where she served as president and CEO. The firm invested in ideas that were interdisciplinary, early technology opportunities with global implications. In this capacity, she served as senior executive in several commercial companies with diverse products ranging from pharmaceuticals to electromagnetic sensing.

In 2009, Dugan was sworn in as the 19th director of DARPA, its first female director and she brought her interdisciplinary, entrepreneurial ideas back to DARPA. Early on, she spoke to the Subcommittee on Terrorism, Unconventional Threats and Capabilities of the House Armed Services Committee. She shared her thoughts about DARPA needing “the minds of the basic scientist and the application engineer, those in universities, and those in industry. And we need them working together, often on a single project, in the cauldron created by the urgency and the technical demands of defense.”

A New York Times article written by John Markoff described her as having a “knack for inspiring, and indeed insisting on, creative thinking.” Under her tenure, then Deputy Secretary of Defense, William J. Lynn, III credited Dugan as “writing the history of advanced manufacturing in the Defense Department among the greats, famous inventor Eli Whitney and former Lockheed Martin CEO Norm Augustine.” Under her leadership, DARPA significantly advanced new manufacturing efforts based on a belief that “to innovate, we must make;” new cybersecurity programs including significant outreach to the “white hat” hacker community; new social media principles, theories and demonstrations; as well as significant contributions to immediate battlefield concerns. DARPA was awarded the Joint Meritorious Unit Award by the Secretary of Defense on September 11, 2012 for its efforts in Afghanistan during her tenure.

Her early-forged beliefs were evident in her discussions at D9 with Walter Mossberg, information technology columnist for the Wall Street Journal. When asked if DARPA was successful because she encouraged people to fail, she disagreed. “I have never encouraged anyone to fail. We don’t encourage failure; we discourage fear of failure.” She said, “Failure isn’t the problem, it’s the fear of failure.”

And in her 2012 TED Talk, she explained more about this philosophy, saying, “Since we took to the sky, we have wanted to fly faster and farther. And to do so, we’ve had to believe in impossible things and we’ve had to refuse to fear failure ... when you remove the fear of failure, impossible things become possible.”

Post Google’s acquisition of Motorola Mobility in 2012, Dugan agreed to form and lead the Advanced Technology and Projects group, the skunkworks-inspired team delivering breakthrough innovations to Motorola Mobility.

Dugan is widely recognized for her leadership in innovation and technology development and has been featured in New York Times, The Wall Street Journal, The Washington Post, Prism, Forbes, Fast Company and Science News, among others; and has delivered keynote remarks at events as diverse as TED, All Things Digital (D9), and FORTUNE Most Powerful Women Summit. In 2011, she was named a Tech Titan by Washingtonian Magazine.
Fred D. Durham
1922, Civil Engineering

Fred D. Durham was born in Howertons, Virginia in 1899. He enrolled at Virginia Tech in the fall of 1917 and after three years of study elected to leave school for a year. He worked in the engine room of a tramp steamer which, among other cargoes, transported coal from Wales to North Africa. After his travels around the world, he returned to school a year later and graduated with a B.S. degree in civil engineering in 1922. While a student, Lt. Durham was a member of the Corps of Cadets, serving as the Sergeant-of-Arms and the Corps' Vice-President. He was also a member of the Cotillion Club and the Rappahannock Valley Club.

After graduation, Mr. Durham went to work for Bell Telephone Company in Atlanta. While there, he was "loaned" to the C. Lee Cook Manufacturing Company in Louisville, Kentucky. Soon thereafter, he joined the company on a full-time basis. In 1927 the company president died and, in 1928, Fred Durham borrowed money, bought control, and became President. The C. Lee Cook Manufacturing Company produced high-temperature, high-pressure sealing devices, including metal packings and industrial piston rings. Mr. Durham's year in the engine room of a tramp steamer had provided the "laboratory experience" to succeed in this new opportunity.

In 1955 Mr. Durham and George Ohstrom formed the Dover Corporation, and the C. Lee Cook Manufacturing Company was merged with three other firms to create the new company. Mr. Durham became Chairman and President of Dover Corporation. He remained in that position until his retirement in 1971. At that time the executives of the company presented him with a tribute quoting Ralph Waldo Emerson's famous dictum: "An institution is the lengthened shadow of one man," and stated further that "Dover Corporation owes its success, character and in large measure its future to the management philosophy and practices of one man." Dover has continued the highly decentralized management strategy that Mr. Durham initiated and today consists of more than 50 separate businesses. It is among the Fortune 500 companies.

The Dover Corporation, with headquarters in New York City, trades stock on the New York Stock Exchange and was featured in the December 1, 1986 issue of Forbes. The company is a leading manufacturer of hydraulic and traction elevators, auto lifts, piston rings and metallic packing, valves and nozzles to handle gasoline and other hazardous liquids, ball-screw actuators, and master-slave manipulators, among other products.

Mr. Durham had a long and distinguished professional career and was a member of the Committee of 100 - an alumni group committed to support the College of Engineering. He was honored as the College of Engineering Distinguished Alumnus for 1987.

He was married to the former Victoria B. Durham. They had a daughter, Eleanor Durham Davenport who currently resides in Richmond with her husband William. At the time of Mr. Durham's death on April 17, 1998, he also had three grandchildren, three great grandchildren, and one great-great grandchild.
Dr. Douglas L. Dwoyer
B.S., Aerospace Engineering, 1964
M.S., Aerospace Engineering, 1967
Ph.D., Aerospace Engineering, 1975

As a toddler, Doug Dwoyer loved airplanes. By high school, he managed to find his way onto the civil air patrol team that allowed him to fly practice search and rescue missions several times a month. He never deviated from his goals and today has some 1700 researchers, technicians and support personnel reporting to him as NASA Langley’s Associate Director for Research and Technology Competencies. And his legacy will include the development of the National Institute of Aeronautics (NIA), charged with developing advanced aerospace and atmospheric research.

His long-term association with Virginia Tech began when the New Jersey native selected its aerospace engineering program in 1960. A member of the Corps of Cadets, he co-oped with Aberdeen Proving Ground, performing aerodynamic work in its Ballistics Research Lab. After earning his bachelor’s degree in 1964, he remained for his master’s degree. But with the Vietnam War, he was soon commissioned as a 2nd Lieutenant in the U.S. Air Force (USAF) and sent to Wright Patterson Air Force Base. After four years in its hypersonic research facilities where he was also able to use his work as a basis for his dissertation, he returned to Tech to get his Ph.D. in 1975.

The aerospace industry was not thriving in the mid-70s, and he had to wait two years for the employment opportunity he wanted most – to work with NASA. A branch manager named Jerry South and Dr. Dwoyer’s veteran’s preference opened the door for him despite a hiring freeze at the government agency. He started in the computational fluid dynamics (CFD) area where South, also a Virginia Tech AE graduate, was a team leader. “Jerry mentored me and four years later I became a branch head,” Dr. Dwoyer recalls.

He has now spent 26 years at the NASA Langley location where the exciting challenges have never stopped and he has a hand in putting together international teams to attack the tough problems. “We work with some of the best scientists, engineers, and mathematicians in the world,” he says.

One of the most challenging programs for Dr. Dwoyer was managing the National Aerospace Plane (NASP) CFD Technology Maturation Program. “This project allowed us to make huge strides at predicting aerodynamics, particularly in all of the basic hypersonic physical modeling for high speed planes. He eventually headed the Hypersonic Technology Office of NASA Langley from 1987 until 1989. From there he became Chief of the Fluid Mechanics Division until 1994. For the next four years he served as the Director of the Research and Technology Group.

Since 1998 Dr. Dwoyer has held his current position where he is responsible for overseeing all of NASA Langley’s systems analysis, technology development, scientific research and systems engineering. Two years into this position, Dr. Dwoyer hosted a strategic planning meeting for a select group to look at megatrends in aerospace and development. “It was clear to us that the way research is done was radically changing. With the pace of technological change, we needed to be in an environment where we could react more quickly. With the government’s discretionary budget pressures and bureaucratic processes, it is hard to be nimble. We decided a new entity outside of NASA that could do business with anyone and be more flexible commercially was needed,” Dr. Dwoyer recalls.

The concept went through a few iterations as the legal eyes looked at the entity and by 2001 NASA issued a competitive process to locate a consortium of universities that would comprise the bulk of the NIA. The successful proposal came from a consortium led by Virginia Tech and the University of Virginia. “It’s a dream team,” Dr. Dwoyer says, “and I believe they will become a major center of innovation in the aerospace engineering field.”

Dr. Dwoyer’s rich career has yet to completely satisfy him. He is now looking at working towards a more sustainable economy. “We can’t continue to consume our resources as we have. We need sustainable aviation by using different energy sources that are renewable. We need to reduce the impact of aviation upon the environment which is more significant than most people think,” says NASA’s head of scientific research. “The water vapor released in the stratosphere has more effect than carbon dioxide emissions. It is clear from the atmospheric science research at Langley that aircraft in the stratosphere have dramatically impacted the overall cloudiness. If we move to hydrogen fuel which produces more water vapor, the potential is the problem will become bigger.”

While Dr. Dwoyer directs his energies towards sustainable aviation, he sees the next generation as a key component to solve the problem. Since the late 1970s, he has served higher education as a professor at the George Washington University and as an advisor. He is on Virginia Tech’s AOE Advisory Board and is now also a member of its counterpart at the University of Maryland. He also points to NIA’s graduate research program as growing faster than anyone imagined.

Among his honors, Dr. Dwoyer received NASA’s Engineering Achievement Award, Outstanding Leadership Medal and the Meritorious Rank Award (twice). He is a Fellow of the American Institute of Aeronautics and Astronautics and a member of Virginia Tech’s Committee of 100. He holds a Commendation Medal from the USAF.

He and his wife Nancy have two children.
At the very young age of 22, Elmer Easton had an exceptionally responsible job. As a mechanical engineer, his duties included insuring that one of the first atomic reactors, located at Brookhaven, N.Y., was fully stocked with the fluid handling inventory it needed to operate efficiently and safely. He says he wasn’t nervous because he had survived a relevant Virginia Tech engineering course with Professor J. Lucien Jones.

“As a first quarter sophomore in mechanical engineering (ME), I walked into Professor Jones’ class, engineering fundamentals, and he had some 30 “plumbing things” sitting on a table. We were supposed to write down what they were. We had no clue!” Easton laughingly recalls.

Towards the end of that academic quarter, Professor Jones arranged a class trip to the Virginia Tech Power Plant where the students, literally crawling around on their hands and knees, had to identify “things” he had shown them on that first day in the classroom. “We had to write down the serial numbers and tell how they were used. It was part of our final exam,” Easton recalls.

“Without Jones’ course, I could not have done the Brookhaven job despite four years of college and one year in graduate school,” the 1947 Virginia Tech honors graduate adds. This “emphasis on fundamentals” was a major lesson that Easton says he gained from his Virginia Tech educational experience, and is largely what kept the New York native linked to his alma mater ever since.

The son of a designer of high pressure piping, Easton found his father’s job fascinating, especially when it took the senior Easton to the Oak Ridge National Laboratory in the 1940s when the Manhattan Project was underway. So, the idea of studying engineering was nourished early in his life.

Until his junior year of high school, Easton attended Townsend Harris High School in New York, considered at the time to be one of the best in the U.S. He enrolled in every math and physics class offered, and by the time his family moved to Hopewell, Va., for his senior year, Easton found he was well ahead of his peers. When he entered Virginia Tech in 1943, he recalls asking his professor on the first day if he could just take the final exam in trigonometry and skip the actual class. The professor refused his request, but Easton believes that Virginia Tech should probably be credited with later encouraging (if not forcing) the high schools in Virginia to improve their math and science education.

Easton found many ways to stay busy at Virginia Tech, writing a column for the school’s newspaper, the Collegiate Times, and authoring an article on one of the engineering icons in the college, Professor Bosco Rasche of electrical engineering, for the 1947 yearbook. “I always had the inclination to write,” Easton says, “and after I was interviewed by General Electric, the company offered me a job as a technical
writer.” “And once more, it was Prof. J.L. Jones who discouraged me from accepting the position he characterized as ‘dead end.’”

Before he graduated, Easton’s studies were interrupted as were most of the men his age in the 1940s. As a first quarter junior, he left Virginia Tech for a stint in the Navy, and was involved in the maintenance of all of the Navy’s ground and ship electronics. He was stationed in Chicago, Gulfport, Miss., and the Naval Research Laboratory in Washington, D.C. Upon his return to Virginia Tech, his work in the Navy turned out to be fortuitous. “As a freshman, I had gotten mad at an upperclassman, and had thrown him in the lake, and so I got a D in military. I couldn’t graduate until the Dean intervened. Dean Norris decided to give me an A for my work in the Navy to counteract the D,” Easton says. He was then awarded his diploma and went directly to graduate school at Columbia University in N.Y. where he earned his master’s degree in management in two semesters.

He remained in New York, and from 1948 until 1950, he worked as an engineer for Vantorn Pump, a developer of specialty pumps including one for use in one of the earliest heart-lung machines for open heart surgery. In 1950 Easton moved to the Curtiss-Wright Electronics Division where he worked on the development of analog computers in flight simulators and in high thrust engine controls.

His reputation grew, and Lear Inc., recruited him to California in 1952. Working directly with William Lear, Easton, now 25, was placed in charge of the Marketing Management Division, upgrading standard commercial aircraft to corporate jets and selling them.

Easton now dealt with “the captains of industry” selling Lear jets to such customers as the Shah of Iran, Mohammad Reza. As Easton attempted to sell the Shah, also a pilot, a Learstar 10 passenger corporate aircraft, he turned the keys to the cockpit over to Reza. “He flew me out of Miami and over the Atlantic. We were only 10 to 15 feet above the water. A guy from the State Department was also in the plane as we literally spun over the waves. It’s not as dangerous as it sounds,” Easton says, but not convincingly.

After five years of such adventures for Easton, Wyle Laboratories of Los Angeles came knocking on his door, luring him to join its marketing and general management team. At that time, 1957 to 1968, Wyle was one of the largest independent laboratories for military and civilian aerospace functional and environmental testing. For a period of time, Easton worked with yet another historical figure, Werner Von Braun, considered to be one of the greatest rocket scientists in history. They met at a test facility in Huntsville, Ala., where NASA centered its rocket development activities. “Chris Kraft, a senior when I was a freshman, was — in effect, my customer.”

Easton’s career took a significant twist in 1968 when he decided to launch his own business, Compucorp. Founded before the era of Microsoft, Easton’s company developed, licensed, and manufactured proprietary microprocessor-based desktop computers and word processing systems. “I wanted to do my own thing and I was familiar with this technology. We built and sold hundreds of thousands of machines worldwide…and had as many as 800 employees.”

After 17 years, Easton closed Compucorp because IBM had introduced its PC. “I did the arithmetic and it was impossible to compete with IBM. They took over the world of PCs and put a lot of companies out of business. IBM also contributed mightily to the emergence of Microsoft,” he explains.

Undaunted, Easton then opened what he calls “a little boutique” called Three D Graphics, a producer of business graphics, financial and predictive analysis software, in 1985. “I started it by acquiring some technology that I thought was interesting and potentially exciting. I wasn’t sure what the markets would be, but I ended up licensing the technology and still do to a number of leading business intelligence companies such as Oracle and IBM. The fun is in the development of new products.” But he cautions, “Developing software is like making movies. Most movies lose money. No one makes a movie intentionally to lose money.”

Three D Graphics’ latest product, a brainchild of Easton’s, is ACUMEN4xl, introduced in 2006. Easton conceived of the idea to produce a new suite of financial analysis software that links his proprietary modeling technology to Excel and then turned the idea over to his staff to develop. “My idea of a bright individual is one who, when given an assignment, comes up with something better than you asked for, and that has happened with ACUMEN4xl and many other times throughout my business history,” Easton says.

Semi-retired, Easton and his wife Evelyn of 50 years, live in Pacific Palisades, Calif. They have kept such close tabs on Virginia Tech, that from 3000 miles away, they have hosted in their home every Virginia Tech President, Vice President of Development, and Dean of the College of Engineering since the 1970s. They are members of Ut Prosim, and he has served on the College of Engineering’s Advisory Board. They have two children, Allan and Lisa.
Anne M. Ellis
Civil Engineering, Class of 1980, BS

When Anne Ellis was a senior studying civil engineering in the fall of 1979, she returned to the Virginia Tech campus with several strikes against her. Diagnosed with mononucleosis, she couldn’t stay home because her mother’s immune system was also compromised – she had been hospitalized the entire summer with Lupus. Anne couldn’t convalesce with her older sister who was pregnant, and her doctors were nervous about the expectant mother’s exposure to Anne’s illness.

So Ellis traveled on to Blacksburg, and after a week in Montgomery County Hospital, had no energy to attend classes. In a separate trip from her, Anne’s sister visited Paul Torgersen, the dean at the time, and explained the situation. Torgersen gathered Ellis’ professors, informed them of the problem, and they charted an academic rescue plan that allowed Ellis to graduate on time.

“My family will be forever grateful. How many schools would do that? Virginia Tech is and was a big school, but I had a home in civil engineering, and they made sure we succeeded,” said Ellis, today a successful vice president for AECOM, a global provider of professional technical and management support services.

“Virginia Tech gave someone from very humble beginnings a wonderful opportunity, and Virginia Tech will always be a part of my life,” said the executive, who is also the current president of the American Concrete Institute, the first female professional engineer to hold this leadership position.

Ellis explained her “humble beginnings” as being one of four siblings, all of whom were the first generation in her family to attend college. Her father made his living as a salesman and her mother was a secretary to a principal in a rural school. For 16 straight years, they provided for one or more of their children to attend college at Virginia Tech, Virginia Military Institute, Longwood College or American University. “My parents instilled a drive in us and they were determined we would be college graduates,” Ellis said.

At first, she thought she would become a teacher. But at 16, Ellis was captivated by the vision of a church group advisor who emphatically told her: “No, you are going to become an engineer.” He even visited her parents with his aspirations for Anne, and she was amazed and flattered by his interest in her future. Another friend advocated Virginia Tech’s engineering program, and encouraged her parents to make the drive from Salisbury, Md., to the campus.

“We arrived on a beautiful spring day, drove around the Drill Field, and it was a done deal,” Ellis recalled. “I came from a rural, small town, and Virginia Tech was the right match for me.”

She found Virginia Tech very challenging but she survived the “weeding out” process of the freshman class that the engineering school was known for in the late 1970s. Then her junior year she moved into the civil engineering discipline and her views changed. “Wow, this is awesome,” is her memory of finally taking classes in her major.

“I was drawn to the tangible results of civil engineer-
ing. We build things. It is fantastic to see the finished product – bridges, buildings – and the impact. With technology evolving, we were entering a dynamic world where we could push the technological frontier and we had the responsibility to share our knowledge and contribute to codes, standards and professional practice," Ellis said, adding that the late Herb Moore, one of her professors at the time, was particularly instrumental in instilling this philosophy.

Ellis credited both Moore and Sigfried Holzer, another faculty member in the department who is now retired, with mentoring her. “They knew I was at a disadvantage, having grown up playing with dolls, but they saw that I had the hunger for the discipline and the mathematical ability.”

When Ellis graduated in 1980, the “economy was going gangbusters, and I had so much opportunity,” she said. During her senior year she had flown numerous places for interviews including Houston, Texas, for an oil company position, Seattle, Washington for a meeting with Boeing, and Long Island, N.Y., for an opening at Grumman. In the end, she selected a structural engineering position with Parson, Brinckerhoff, Quade & Douglas in the Washington, D.C. area.

After about 18 months, the country’s economy tanked, and Ellis was handed a pink slip. But she bounced back quickly and joined Martin, Cagley & Middlebrook as a project engineer on flagship building projects. Additional exciting projects followed when she joined Dewberry & Davis (now Dewberry) as a project manager. Her portfolio of projects included hospitals, and many high-rise buildings.

Ellis found the challenges of designing casinos and hotels particularly exciting, and the Trump Marina (designed for the Hilton and now the Golden Nugget) in Atlantic City was one of her achievements. “The cost of the structure is almost insignificant compared to what goes in the building – theaters, skating rinks, rooftop swimming pools, sophisticated security technology, each presenting unusual challenges from an analysis, design, and construction perspective. In an Atlantic City casino, coin storage necessitated we design framed floors for 2500psf – that is a car per square foot,” Ellis explained.

With Dewberry she worked on a number of local building projects, allowing her to visit the construction site and view the progress frequently.

In 1992, blessed with two children and pregnant with her third child, Ellis decided to take time off. To keep her hand in the profession, she became a contract instructor, working for Total Training Technology (TTT). She helped engineers who needed their professional engineer license (PE) to advance to the next level in their careers. She stayed with them for several years, allowing for all of her children to be in school.

She returned to the full-time workforce in 1996 in the non-profit arena, first for the National Ready Mixed Concrete Association and later for the Portland Cement Association. She represented these non-profits’ interests in the arena of standards and codes.

In addition to this work, Ellis advanced landmark green building regulation and legislation as well as adoption in project specifications of construction personnel certification aimed at improving quality of construction. “During this time, I became aware of and fascinated by the bigger arena – social and political – that impacts our profession,” Ellis said. “I also became acutely aware of legislation” impacting construction.

In 2001, fellow CEE alumnus, Dennis Kamber, also a member of the Academy of Engineering Excellence, convinced Ellis to join Earth Tech, Inc., as a program director. The company, then part of Tyco International, was growing quickly through acquisition and Ellis’ job was in market development supporting the engineering business – much newly acquired and integrated – in organic growth.

“Earth Tech was exciting – growth focused and quite successful,” she said. So when the parent company, Tyco, imploded in 2002 due to the misconduct by its former chairman and CEO Dennis Kozlowski and his senior management team, Ellis described the situation as if “an earthquake hit.” Her career took a surprising turn. She managed some of the fallout, and worked on Capitol Hill and with state legislatures to help address the company’s credibility. This high profile and successful corporate initiative led to additional special and sensitive projects. The ability to analyze situations and design solutions proved as valuable in business as it did in engineering.

In 2008, Earth Tech was acquired by AECOM. Ellis now vice president, Americas & Government, supports special projects for the Fortune 500 executives. She drives business critical initiatives, develops solutions for uncharted and complex challenges, and engages in policy, legislative, and regulatory issues affecting AECOM and its clients and markets.

With the company through its 11-year evolution, she also is responsible for two of AECOM’s advisories: the Government Services Advisory Council and the Global Advisory Board. Comprised of global business and geopolitical leaders, these advisories provide valued insights and advice on entering and growing business in new geographies, business lines and high-growth services building, enhancing and sustaining natural, built, and social environments.

“It is a privilege to work with AECOM’s executive team as well as the Council and Advisory Board members, former prime ministers, secretary general of the UN, military commanders and presidential advisors – leaders who have shaped our world,” said Ellis.

Ellis is engaged in professional and industry activities. She is the co-author of the “Concrete Design and Construction” section of the Standard Handbook for Civil Engineers, Fifth Edition. She is a Fellow of the American Concrete Institute. She serves on the Environmental Technologies Trade Advisory Committee by appointment of the U.S. Secretary of Commerce since 2002. She judged the American Society of Civil Engineers National Concrete Canoe Competition in 2004, 2005 and 2012. At Virginia Tech, Ellis has served as a member of the advisory boards for the college, the CEE department, and the Alexandria Research Institute.

Ellis and her husband, Marc Lubin, reside in McLean, Va. She has three children: Jake and Olivia are Virginia Tech Hokies, and Julie graduated from Hunter College in New York City. Her blended family includes Marc’s children: Alexander, Emily, Caroline, and her husband, Alan.
For Virginia Tech, Robert Epperly represents the epitome of the local boy who rose to the status of the captains of industry. Born in his grandparents’ home in the tiny community of Rogers, part of Christiansburg, Va., his family moved a few months later to Pulaski, Va., where they operated a grocery store. His Virginia ancestors were among the Epperlys who co-founded the Zion Lutheran Church in Floyd County in 1813.

Thanks to his mother’s influence, he was the first generation in his family to attend college in 1952. She promised his father she would work at the family grocery store if Bob, her only child, could enroll at Virginia Tech. Since money remained an issue, the teenager carpooled to the campus for his first two years, and continued to help out at the grocery store in the summers. By the time his junior year arrived in chemical engineering, he realized that the intense coursework meant he would need to live in Blacksburg. A University professor rented him a room, and with a life that almost totally focused on academics, he secured a fellowship by his senior year, and continued on for graduate school in 1956. One exception to his tunnel vision towards academics was that he met his future bride, Sarah, when he was a senior.

Another stroke of good luck also came the summer before his senior year. The chemical company E.I. Du-pont hired him, and the paycheck he received was a far cry from the grocery store. When he showed the earnings to his father, he recalls his dad had tears streaming down his face.

He and Sarah became the first couple to marry in the Blacksburg Presbyterian Church on the day she earned her bachelor’s degree in 1957. With a quick honeymoon in Asheville, N.C., the family man completed his master’s degree in the following six weeks by writing his thesis. Exxon, the company that provided his fellowship, showed a lot of interest in hiring him, and the work offered to him was “extremely exciting.” It was a boom time for chemical engineers, when the bottom person in his class still had six job offers. He decided the move to Exxon’s facility in Linden, N.J., would be the most appealing for a young man from southwest Virginia in the late 1950s.

“We moved to an extremely ethnic area, all of which was brand new to me. I discovered hard bread, Polish Kielbasa, and draft beer. I went to New York, and felt the thrill of Yankee Stadium, and saw the icons – Mickey Mantle and Phil Rizzuto. Sarah went to work as a dietician, and we were both engaged professionally,” Mr. Epperly recalls.

Within three months he was named a pilot plant supervisor, and had four experienced operators working for him. His work gained in responsibility, and in 1968 he was named director of the fuels research laboratory,
was cut in half, against my recommendation. We were remain low for a long period, and corporate research management correctly predicted that the oil prices would syn fuels. I really stressed the longer range flavor… But very rewarding. The entire world thought we needed responsibility for laboratories with an annual budget of $50 million. During his last two years with Exxon until he retired in 1986, Mr. Epperly was the general management of all synthetic fuels research and development. Staffed with about 100 engineers, he was confronted with the challenge of initiating some of the largest commercial projects that Exxon had ever undertaken.

In 1980 he became general manager of the synthetic fuels department in Exxon Engineering, and his technical responsibility now included all process planning and design in support of three multi-billion dollar commercial projects, and for the engineering support of all synthetic fuels research and development. Staffed with about 100 engineers, he was confronted with the challenge of initiating some of the largest commercial projects that Exxon had ever undertaken.

In 1983 he became the senior program manager of synthetic fuels research, with responsibility for co-ordination of all major process development projects including shale retorting, coal liquefaction, and coal gasification, with a combined annual budget of over $50 million. During his last two years with Exxon until he retired in 1986, Mr. Epperly was the general manager of corporate research and had general administrative responsibility for laboratories with an annual budget of $120 million and 575 employees.

“My most rewarding time with Exxon was the time I spent in synthetic fuels. It was very demanding, yet very rewarding. The entire world thought we needed syn fuels. I really stressed the longer range flavor… But as the oil prices started to decline again, the top management correctly predicted that the oil prices would remain low for a long period, and corporate research was cut in half, against my recommendation. We were trying to build a world-class lab analogous to Bell Labs, and we had stars, the cream of the crop, working for us,” the researcher says. He understood management’s change in directive, but for him, he needed a new challenge.

So, at 51 Mr. Epperly joined the Fuel Tech Group, a publicly held international organization for developing and commercializing technology to improve combustion efficiency of petroleum-fired engines and boilers, and to decrease emissions of undesirable combustion products. By 1989 when he was named the chief executive officer of the Stamford, C.t., based operation, it had sales of $12 million with 150 employees. During this time, some one-half of his total of 38 patents was awarded. “It was a very creative period, and it was fun being over 50 and going back to being creative technically,” he smiles. One patent he is particularly proud of concerned a process to remove smog producing nitrogen oxides from flue gas in large steam boilers and incinerators, a process that is commercially employed in over 200 international locations today.

In 1992 he moved to Catalytica, Inc., based in Mountain View, Cal., as its vice president. Within two years he became president and director of one of its subsidiaries, Catalytica Advanced Technologies, Inc., a company focused on commercial markets for new catalyst technologies. He retired for the last time in 1997.

Today, he remains a consultant to the energy industry, as well as to Virginia Tech’s energy initiatives. “I actually try not to stay busy now,” he laughs, “as I spent my life being busy. I enjoy nature photography, and I continue to do some volunteer work with the National Academy of Sciences on matters of national importance.” He was recently named a National Associate of the National Research Council of the National Academies after some 30 years of working on various studies.

In regard to his work with Virginia Tech, he is specifically advising Don Leo, associate dean, College of Engineering, who also has the appointed task of coordinating the entire University’s efforts in energy research. “Colleges and universities have to do this work because I do not see the energy companies doing enough of it. Colleges and universities have to do this work because I do not see the energy companies doing enough of it. I think there is a great opportunity for Virginia Tech in the biofuels area,” Mr. Epperly concludes.

The Epperlys are members of Virginia Tech’s Committee of 100 and the Ut Prosim Society, and he often returns to guest speak to engineering classes. A Fellow of the American Institute of Chemical Engineers, he received its 1983 Award in Chemical Engineering Practice. He was part of a team that earned an Industrial Research IR-100 Award, also in 1983. In 1986 the University of Pittsburgh presented him its Award for Innovation in Coal Conversion research, and in 1992 he won the Connecticut Patent Law Association’s Eli Whitney Award.

The Epperlys have three children and three grandchildren.
In 1982, Virginia Tech electrical engineering alumnus Gil Faison was riding high, as the Virginia Association of Professionals named him the “Most Outstanding Professional of the Year.” A year later, he recalls, he was facing some of his “darkest days,” working 70 to 80 hours a week to keep his business, Roache, Mercer & Faison, afloat.

Faison joined Roache and Mercer in 1959. The owners, two mechanical engineering graduates of Virginia Tech, recruited Faison with the offer that he would eventually become a partner in the young mechanical and electrical engineering consulting firm. “I had heard that they were good VT men,” Faison says, and so he decided to accept their proposal. Within two years, he assumed a full partnership. For the next 32 years, Faison spent his time working from the Richmond, Va., office, traveling from New York to Panama for his various contracts.

Some of the larger design work was the $70 million SunTrust headquarters and the Massey Cancer Center, both in Virginia’s capital city. “We specialized in retrofitting, and I believe we worked on every building at the Medical College of Virginia,” Faison says.

“In our government work, we negotiated for the prime design contracts, and then hired the architects and other design subcontractors. We prided ourselves in our work and our insurance carriers never had to pay for a claim filed against us,” Faison adds.

So, when his associates retired in 1983, leaving Faison to run the company solo, he discovered that the firm’s accounting had been mismanaged, and as a result, they were in substantial debt. Gil turned to his lifelong partner, Jewel, whom he had met while she was an architecture student at Virginia Tech in 1948. She co-signed bank notes with him, and they both proceeded to rescue the business.

Faison’s career at Virginia Tech was interrupted as was most young men in the World War II era. He started college in 1943 at 17, but by the beginning of his sophomore year, he had to enlist in the Navy or face the draft. “I was able to attend the Navy’s radio school in Panama and play on its baseball team. Our team won the Isthmus championship against the Marines in a playoff that year,” Faison smiles.

He returned to Tech, graduating in 1949, but lists himself with the Class of ‘47. He was a member of the various honorary societies including Tau Beta Pi, Omicron Delta Kappa, and Eta Kappa Nu. He has amusing memories of his life in the old number 1 barracks, Lane Hall, a place he describes as having “no amenities.” The window sash had gaps, and so in the winter, when the heating pipes gave out, and there was no heat, “we would pour water into the cracks. It would freeze and prevent the colder air from blowing in and the warmer air from escaping,” the engineer grins.

When he first graduated Faison went to work for Appalachian Power Company, based in Lynchburg. This job made him realize that he would eventually want to have his own company. “I was doing engineering out of a cookbook” for the power company and “I really wanted to work on designs of my own,” he recalls. So when Hayes, Seay, Mattern and Mattern, a Roanoke, Va., based engineering firm offered both him and Jewel employment to work on the company’s contract to redesign the Radford Arsenal, they both accepted. “In fact, they offered Jewel a higher salary,” he reminisces.

Jewel was the only woman working in the firm’s design section at the Arsenal, and she often found herself tormented by her colleagues who would place a fake spider in her path at various times until she got the last laugh and finally flushed it down a toilet.

As an architect she worked with other Hokie celebrities such as G.T. Ward and T.C. Carter, both graduates of the College of Architecture.

“She worked fast,” Gil recalls, saying his wife would often finish a project and then help others. “I was the one green behind my ears, but I learned fast” as he was responsible for the redesign of the electrical distribution system of the Radford Arsenal.

From there Faison remained on a path trying to learn everything he could in the fastest way possible. “I spent a year with W.A. Brown, an electrical and mechanical engineering firm in Richmond, and then spent another year with Allied Chemical and Dye to give me industrial experience.” His final stint was with another consulting firm, Emmet Simmons, for five years before he joined Roche and Mercer.

During his career, his civic work thrived, serving as a past president of the Consulting Engineers Council of Virginia, the Hanover County Ruritan Club, the Electrical League of Richmond and the Richmond Alumni Chapter of Tau Beta Pi. He spent 24 years on the Henrico County Building Code Board of Appeals, and left feeling as if he was “the grand daddy” of the organization. He continues to teach Sunday School and serve as a trustee, and was his church’s volunteer choir director for 25 years. He was a founding member of Virginia Tech’s Bradley Department of Electrical and Computer Engineering Advisory Board.

But his proudest volunteer achievement was his selection as the “Professional of the Year.” At the time, in the early 1980s, a movement was afloat in Virginia to require all professionals to bid out their services for state government contracts, so that the award of a contract of professional services would always be given to the low bidder. Professional services included were in the areas of accounting, architecture, land surveying, landscape architecture, law, medicine, optometry, and engineering.

Faison successfully argued “competitive bidding works when there is a clearly specified product. But building, bridges, and highways are not clearly specified products. Indeed determining specifications is one of the primary functions of the engineer or architect. Design professionals contend that it is far better to arrive at a price by negotiating with the most qualified of the three or four firms selected in a traditional competitive negotiation procedure.”

And while he was being politically active, he was also one of the Virginia engineers who successfully helped the University lobby for the completion of the top three floors of Whittmore Hall on the Virginia Tech engineering campus.

Faison and his wife reside in Mechanicsville, Va., in a home she designed 18 years ago. Their daughter, Michele, and her husband live next door in a home that Jewel also kibitzes on. But nowadays, a lot of the shopping is done on the web, and Jewel admits she is not as patient with the art of surfing the internet as she was when dealing with the spider.
Cheyenne Mountain is a Cold War icon built inside a mountain in Colorado Springs that served as the mainstay of the North American Aerospace Defense Command (NORAD). Housing response centers, computers, and myriad tools to carry on the defense of America and Canada, it was the MacGuffin of countless war thrillers and science fiction, from “WarGames” to “Stargate.” David Finkleman, who graduated from Virginia Tech in aerospace engineering in 1963, knows it well.

For 18 years, Finkleman served as Cheyenne’s chief technical officer and director of analysis for NORAD, and U.S. Space Command (USSPACECOMM), as well as U.S. Northern Command following the events of Sept. 11, 2001. He was the top civilian in these commands, from 1985 to 2003, trusted advisor to 12 four-star generals, including the U.S. Air Force’s Chuck Horner of Desert Storm fame. He remains the only civilian ever appointed to USSPACECOM’s Battle Staff. His work, to this day, is admired by those inside and outside the operation.

Finkleman was on duty during major events from the losses of space shuttles Challenger in 1986 and Columbia in 2003, to the events of September 11, 2001, when four commercial jets were hijacked and used as makeshift missiles, killing thousands. “That was an intense day,” he said.

On Sept. 11, NORAD was engaged in scheduled live-fly exercises to which Russia responded, as always. Practice quickly shifted to grim reality. “Everyone was mobilized for the exercise. Everyone was in place for the real thing,” said Finkleman. “Russia called their jets back so we could concentrate on our problem. Fearing terrorism, Korean airliners would not land in the U.S. Canadian CF18s guided them into Canada. NATO sent its AWACS [Airborne Warning and Control System] aircraft to help the United States.”

The next day, Finkleman was a member of the team that flew the country in a U.S. Air Force Lear Jet to assist in security response matters. A retired U.S. Air Force officer, Finkleman found the experience eerie. “It was like something out of a Stephen King novel,” he said. “The only aircraft in an empty sky.”

In his daily duties, Finkleman was tasked with tracking satellites and rocket launches, estimating trajectories or impact points, detecting new satellites, and assisting satellite operators to avoid collisions. He was responsible for planning fighter interceptor and radar deployments for North American defense and spent time in the Arctic. He had a role in almost every
military satellite and strategic defense program for nearly three decades.

“He’s probably one of the top people in terms of taking theory and turning it into applications,” said Chris Hall, former department head of aerospace and ocean engineering at Virginia Tech and now at the University of New Mexico, where he directs the school’s mechanical engineering department. “He’s also a significant leader in the military space business, almost everyone knows him.”

“Dr. Finkleman is a widely recognized expert in space debris,” wrote Kyle “Terry” Alfriend, a fellow Virginia Tech College of Engineering alumnus and a professor of aerospace engineering at Texas A&M University, in his nomination letter of Finkleman. “He and colleagues developed a new, fundamental understanding of satellite fragmentation.”

Finkleman’s other accomplishments are far-reaching. He helped lay out the orbit architecture behind GPS, Defense Support Satellite and Space Based Infrared Satellite launch detection systems, space surveillance networks, and more. He also led development of North American and overseas theater missile warning algorithms still used worldwide, which his organization developed during Desert Storm.

Finkleman earned the two highest civilian awards: Distinguished Service medals from both the U.S. Navy and the Department of Defense. He also has been honored twice as a Federal Meritorious Executive and twice as a Federal Distinguished Executive. He holds many military awards, including the Legion of Merit. He is a Fellow of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, the International Association for Advancement of Space Safety, and the American Association for the Advancement of Science. He is an Academician of the International Academy of Aeronautics and the International Institute of Space Law.

Since leaving federal service in 2003, Finkleman has served as senior scientist of the Center for Space Standards and Innovation and convener of the International Standards Organization Space Operations Working Group. Finkleman and his colleagues formed and operate the Space Data Center, the first and only nongovernmental satellite traffic management capability. He also contributes to the United Nations Committee on the Peaceful Uses of Outer Space and the International Communications Union, as well as the European Space Policy Institute, the United Nations’ Institute for Disarmament Research, and the Eisenhower Institute for Space and Defense. His expertise is sought internationally, including from China.

Long before that, during the late 1950s, Finkleman was a teenager in Washington, D.C. The stateless nature of the nation’s capital at that time meant that he was not eligible for in-state college tuition anywhere or for the military academies. Yet, Virginia Tech offered the right combination of affordability, military, and academics. Participation in his high school’s ROTC program spurred Finkleman’s interest in a military school, and the Corps of Cadets fit the bill. “It was a lifetime experience,” of the camaraderie he felt in the group.

After Virginia Tech, Finkleman earned a master’s degree in 1964 and a doctoral degree in 1968, both at the Massachusetts Institute of Technology. Future astronauts who were his classmates at MIT convinced Finkleman to transfer his Army ROTC commission to the U.S. Air Force. His career was set there.

During the Vietnam War, Finkleman was assigned to teach at the U.S. Air Force Academy in Colorado. “I was the youngest person on the faculty,” he said. “Some of the cadets were older than me.” He taught as an associate professor of aeronautics, and conducted research and analysis in aircraft aerodynamics and control. He and his colleagues developed optimal maneuvers to evade surface to air missiles in Vietnam.

He was an early member of the Air Force’s High Energy Laser Project and the Airborne Laser Lab. Finkleman left active duty with the Air Force for the reserve after being recruited by the U.S. Navy Directed Energy Weapons Program. He served an additional 20 years in Air Force Material Command, where he retired a full colonel, assistant director of laboratories.

David Vallado, author of a widely used astrodynamics text, has known Finkleman from the U.S. Air Force Academy to NORAD/ USSPACECOMM, and then AGI, where Vallado is now a senior research astronomer. Finkleman’s knowledge of hundreds of people, from the private sector and the military, and his expertise on the latest technology in aircraft, spacecraft, aerodynamics, and astrodynamics. “He really kind of held everybody together,” Vallado said of Y2K.

Finkleman’s level-headedness and calmness also is a shining trait, Vallado said. He points to Y2K, the change over from 1999 to 2000, as an example, when Finkleman was locked in Cheyenne in case anything went wrong. Finkleman was the technical authority and certifying official for the U.S.-Russia Joint Stability Center over Y2K.

The scope and depth of Finkleman’s career are unique; he has military and civilian, academic and industry, government and private enterprise, as well as international diplomatic and technical stature.
J. Stuart Franklin, Jr. (posthumous)
B.S. Civil Engineering, 1950

The engineering prowess of J. Stuart Franklin, Jr., remains visible today on many of Virginia's finest buildings and structures. Among them are downtown Roanoke's First National Exchange Bank building and Roanoke Memorial Hospital and its surrounding facilities. Stu's imprint came from his partnership in one of Roanoke, Virginia's oldest architectural and engineering firms, today known as SFCS Inc.

Stu, a 1950 civil engineering graduate of Virginia Tech, was born in Richmond, Va., but his entire professional career was associated with Roanoke. He married his wife Margaret May of Roanoke two years before his graduation from Virginia Tech, and as she laughingly relates their story, she got her soon-to-be-husband to propose marriage as well as his first job in a single, forthright sentence.

The episode happened at the Roanoke Airport where Margaret worked for American Airlines. Her friendship with Stu's sister, Rebecca, had led to their dating for two years. So when Stu was with Margaret at the airport one day in 1948, and they happened to run into Beaufort Eubank of Eubank-Caldwell, (an architectural-engineering company founded in 1920 in Roanoke and the predecessor to SFCS Inc.) she seized the opportunity. As Margaret recalls, Eubank asked when the two "love birds" would be getting married. She did not miss a beat and responded, "As soon as you give him a job." Eubank complied with the request, and Stu, a rising junior at Virginia Tech, got his job as a structural draftsman at Eubank-Caldwell and Margaret became Mrs. Franklin.

When Stu died in 1999, Reverend Nelson Harris of Roanoke spoke at the eulogy. Among his tributes he said, "Perhaps Stu's greatest enterprise, one where his skill and artistry were most evident and appreciated, was his 51-year honeymoon with Margaret. They took on a house on Woodland Drive and made it a home. Nestled amongst azaleas and rhododendrons and bird feeders, Stu found solace in the simple beauties of nature and in the beauty of his kindred spirit, Margaret. In a marriage that spanned a half-century, they traveled the world, shared joys, halved sorrows, and found the mutual support each needed in their many endeavors. It was, says Margaret, 'a love affair.' And it will remain so."

Stu's rise to prominence as a civic and business leader in Virginia came from humble beginnings. When Stu finished high school, he spent his first year as an estimator for Virginia Insulation Co., of Richmond. He moved to Roanoke in 1940 to become a draftsman for the Appalachian Electric Power Co. Another year went by, and he became a field engineer for Mason & Hanger of Dublin, Va. When World War II erupted, Stu spent three and a half years in the U.S. Army Corps of Engineers. He became a staff sergeant and was stationed in North Africa and Hawaii. Returning from the War, Stu decided to get his bachelor's degree in engineering even though he had been involved in the profession for a number of years. While at Virginia Tech, he became active in the American Society of Civil Engineers (ASCE), serving as both treasurer and vice-president of the student chapter. He continued his membership throughout his professional life, later as President of the Roanoke Branch, and then in a series of leadership positions at the statewide level. ASCE eventually named him a Fellow of the society.

Stu stayed at Eubank and Caldwell for five years, and then left for a similar position with the American Bridge Division of U.S. Steel Corporation. It had offices in both Roanoke and Chicago, and the one year they spent in Chicago was "too long" as Margaret recalls. They hastened back to southwest Virginia where Stu was hired as Vice President and General Manager of Cates Building Specialties, Inc., in 1958. In 1961, Stu returned to Eubank's firm, only this time as a Partner. He remained in this role until his retirement in 1980 when the firm had morphed into Sherertz, Franklin, Crawford, Shaffner, Inc. Pat Shaffner is a 1961 civil engineering graduate of Tech's College of Architecture.

Shaffner had first met Stu in 1950. "He was my Sunday School teacher," Shaffner says. Their paths continued to cross when Shaffner studied civil engineering at Virginia Tech because Stu was the liaison to the Virginia Tech chapter of ASCE. Although Shaffner started at another Roanoke engineering firm, he moved to Eubank, Caldwell, Dobkins, Sherertz & Franklin in 1968 when Stu offered him a position with the ultimate opportunity of becoming a partner.

"Stu was a very honest, very loyal person who always kept his word," Shaffner recalls. "He befriended me in Sunday School and was then my friend for life. Two years after I joined the firm, I was made a partner. I learned the practical side of engineering from Stu. He was a mentor to me and I credit any successes I had to his mentoring." Shaffner also recalls that Stu was very fond of traveling, and was an amateur photographer. As Margaret says, "We traveled around the world together, each year taking a substantial trip. We never just beached it. But I was always in the wrong shoes," she laughs as she points to a picture of her walking on the Acropolis in Athens, Greece in a pair of high heels.

However, Margaret's attire fit the couple's Virginian roots. "Stu was a true Southern gentleman. He always had a coat and tie on, even after retirement," Shaffner says. "The well-respected Roanoke businessman ate every day at the Jefferson Club where they even named one of their luncheon entrees after him."

Stu's professional and civic affiliations included his membership in the Virginia Society of Professional Engineers (VSPE) as a Director and as a Vice President. He was a member of the Virginia Chamber of Commerce, and held the positions of Director, Vice President and President of the Roanoke Valley Chamber of Commerce. He was the Director, Vice President and President of the Better Business Bureau of Western Virginia. He also served as President of the Miss Virginia Pageant. "He liked those girls," Margaret laughs.

He was also a past Lt. Governor of the Kiwanis Club, and a member of the Masons, the Elks, Hunting Hills Country Club, the Shenandoah Club, the Jefferson Club, and the Rhododendron Society. At Virginia Heights Baptist Church, Stu served as a Sunday School teacher of senior high boys and was an ordained deacon. "Stu was kind and gentle, but ambitious," Margaret says.

Stu would be proud of SFCS Inc. today. It provides professional services in the disciplines of architecture, engineering, planning, and interior design from its offices in Roanoke and in Charlotte, N.C. Specializing in the design of senior living, education, health care, corporate, and government facilities, its staff now numbers more than 60.
Dr. Daniel Frederick

B.S., Civil Engineering, 1944  
M.S., Applied Mechanics, 1948

“A measure of a man is in the company he keeps.” This often-quoted truism, when applied to Daniel Frederick, speaks decisively of a career rich in achievements. Dr. Frederick directed a period of intense growth in Virginia Tech’s Department of Engineering Science and Mechanics (ESM), a relatively small department within the college, from 1970 until 1989.

One measure of the growth was in the stature of the ESM faculty. Upon Dr. Frederick’s assumption of the department headship, ESM had an allocation of only 20 faculty positions. Dr. Frederick’s first hire was Dr. Ali Nayfeh, who was to go on to lead a truly exemplary research program and be named a University Distinguished Professor. Prior to Dr. Frederick’s appointment, no distinguished or named professorships existed in ESM. By the 1988-89 academic year, the faculty numbered 38, two of whom held named professorships, another two occupied the position of Alumni Distinguished Professor (ADP), including Dr. Frederick, and yet another duo were University Distinguished Professors (UDP).

The faculty also excelled in teaching. Dr Frederick encouraged experimentation with new methods of teaching, aimed at improving the learning process. Each year during his tenure, the department conducted an effective teaching program, required for all new faculty, and conducted by previous winners of teaching awards. The results were impressive. During the Frederick years, five won the University’s Sporn Award for Teaching Excellence; four were named Wine Award winners (another teaching award); and another five were admitted into Virginia Tech’s Academy of Teaching Excellence. Glen Kraige, a recipient in each of these categories, went on to receive the State Council for Higher Education’s Outstanding Educator Award.

The research program was another indicator of Dr. Frederick’s stewardship. The year prior to his appointment as department head, sponsored research expenditures totaled an almost insignificant sum of $44,284. During the last fiscal year of his tenure, the ESM department had achieved research expenditures of $3,800,000, ranking it as one of the top research departments in the nation in 1989. Correspondingly, the graduate student enrollment increased from 49 to 165. Dr. Frederick assumed an active role in this achievement, coordinating and administering at that time the largest single research project ever funded at Virginia Tech. Called THEMIS by its funding agency, the U.S. Department of Defense, the interdisciplinary project between ESM and civil engineering ran from 1969 until 1975. THEMIS provided the foundation for the large and successful research program in composite materials at Virginia Tech. In addition, seven of the ESM faculty during Dr. Frederick’s tenure received the Alumni Research Award, a remarkable number when one considers the scope of departments in the University.

When Dr. Frederick retired in 1992, he had the distinguished record of teaching every semester of his 45 years on the faculty of Virginia Tech. The University honored him with the title of ADP Emeritus. He is the co-author of two books and the author of numerous other publications. The American Society of Civil Engineers presented the Huber Research prize to him, and the Mechanics Division of the American Society of Engineering Education (ASEE) awarded him its Outstanding Educator Award. He served as President of the Society of Engineering Science, the American Academy of Mechanics, the Association of Chairmen of Departments of Mechanics, and the Mechanics Division of ASEE. He is a Virginia Tech graduate, earning his bachelor's degree in civil engineering in 1944 and his master's degree in applied mechanics in 1948. The University of Michigan awarded him his doctorate in engineering mechanics in 1955.

Dr. Frederick continues to reside in Blacksburg with his wife of 50 years, Frances. They have four children and 11 grandchildren.
Eustace Frederick
B.S., Mining Engineering, 1952

In the early 1900s, two Russian peasants under the Czar's rule immigrated to the U.S. where they later met, fell in love, and married. They possessed strong work ethics and a desire to make sure their children received a good education. Eustace Frederick was one of their sons, and appreciated his parents' ambitions.

He considered the medical profession but, in a sense, that saddened his father who told the young man that he could not afford to send him to school for eight years. Eustace's father, who had only finished third grade, had a miner's salary. His grandfather had also been a miner. So, when the young Frederick's plans for becoming a doctor seemed inaccessible, he sought the advice of his high school principal. The mentor's sage advice was for Frederick to study mining engineering where he "could make a difference in safety measures for folks like his father and grandfather."

Eustace appreciated this wisdom and applied to Virginia Tech. His parents' concern for the cost of his education became unfounded.

During the summer of 1948, the Virginia Tech football coaches asked Eustace to try out for the sport. Successful, he was awarded a four-year scholarship. When Eustace became a junior, he earned an additional salary of 90 cents a day through his ROTC membership. As Eustace modestly recalls his college days he says, "My one claim to fame at Virginia Tech was I was the only person to graduate in 1952 in four years as a football player."

But today, he has many claims to fame. He spent the next 40 years with the same company, Consolidation Coal Company (now CONSOL), where his former principal would be proud of his achievements in mining safety. He worked his way up, becoming a vice president after 18 years. In 1978 he was promoted to Vice President and Assistant to the President and Chief Operating Officer. Two years later he became the Senior Vice President of Mining for the Southern Appalachia Region, a position he retained until 1992. He remained a consultant to the mining industry until he became a member of the West Virginia legislature.

Throughout his career, he remembered his principal's advice, keeping safety a top priority. For example, roof falls were a major cause of fatalities in coal mining. Mr. Frederick is credited with pioneering the efforts in the 1970s to develop the Automatic Temporary Roof Support System (ATRS), a means of supporting the mine roof using hydraulic-pressure jacks in low-coal mining. He then improved the ATRS to become part of the roof-bolting machine used in mining. The ATRS has saved many lives and prevented numerous injuries, according to Jack Holt, Vice President with CONSOL Energy.

Another hazard associated with operating underground mining equipment in low coal seams was the lack of any overhead protection on machinery due to physical constraints of the seam height. Although the mining industry recognized this hazard to the machinery operator, it was Mr. Frederick who made finding a solution a priority for his company. He led the efforts to retrofit a canopy for each specific type of machine, and it was his commitment to the project that made it a success, Holt recalls.

Mr. Frederick's continual efforts resulted in more enhancements. Literally, due to his insistence, Holt says, hundreds of roof bolt tests were performed in various types of roof strata. "As a result of the roof tests and experiments, the improvement in roof bolts and resin was remarkable," Holt says. "Tensile strength was increased fourfold and new anchoring techniques were discovered." Furthermore, his efforts produced the metacarpal glove for miners, designed to reduce the possibility for cuts and fractures, as well as minimize the need for amputations.

A major project initiated under Mr. Frederick's leadership was the opening of CONSOL's Buchanan No. 1 Mine in Buchanan County, Va., the most gaseous coal mine in the world. This mine extended some 1500 feet below the surface. Each ton of coal in place contained an average of 600 cubic feet of methane. Using a new technique, CONSOL removed the methane prior to the mining of the coal. The innovative practices allowed this operation to grow into the largest coal mine in Virginia, providing jobs for 425 employees. And with the volume of methane being vented into the atmosphere, CONOCO looked at commercializing the product. Mr. Frederick's leadership in installing a pipeline led CONOCO to become Virginia's largest gas producer, generating 140 million cubic feet per day, well over half the gas produced in the Commonwealth. This gas project employs an additional 600 area residents.

Consol Energy received the 2002 U.S. Environmental Protection Agency's Climate Protection Award for these efforts to capture the methane, and Mr. Frederick received the North American Coal Bed Methane Form Award for his vision and courage in pioneering improved safety. "Methane was always a huge concern and I worked 40 years in different and difficult conditions without ever having a major catastrophe," Mr. Frederick recalls.

Although he retired in 1992, his concern for miners has never stopped. A fortuitous phone call in 1993 asking him to consider submitting his name for an unfilled term as a House of Delegates member in West Virginia led to his serving in political office for the past 11 years. He laughingly recalls that his wife was in Israel at the time of the inquiry from a Mercer County Democratic party leader, and he had to make a decision in three hours, leaving no time to consult with her. The Governor later appointed him, and the voters have continually re-elected him.

He quickly became the major sponsor of legislation to reorder the development of a coalbed methane/degasification bill, similar to legislation developed in Virginia. The result is another successful employment opportunity with several hundred people working in high paying jobs, selling approximately 20 million cubic feet of methane daily. In 1994 he received the Professional Award for Mining Health, Safety and Research. In 1995 and in 2003 he assisted in the most significant Workers' Compensation Reform in decades, enabling the Mountain State to pay some of its compensation debt, and assured that workers would receive their benefits as earned.

At Virginia Tech, Mr. Frederick has received the Distinguished Alumnus Award in Mining Engineering, the Department's Burkhart Award, and the College's Distinguished Service Award. He is a member of the College's Committee of 100 and has served on the College's Advisory Board.
Frank L. Gaddy
Mining Engineering; BS, 1948; MS, 1956

When Frank Gaddy was old enough to attend junior high school, his family lived three miles away. His only option was to walk to and from his classes each day, carrying a kerosene lantern much of the darker winter days. But it gave him the opportunity to start what would become a lifelong career interest -- along the hour long walk, he would pick up interesting rocks, and often show them to his science teacher. He encouraged his interest, taking him and another student on a field trip to the Appalachian Trail on the Blue Ridge Mountains.

Some 70 years later he would receive the Rock Mechanics Award for the groundbreaking work that he did as part of his master's thesis at Virginia Tech, the premise of which is still taught in the mining engineering curriculum worldwide today.

Gaddy's second love as a youngster was the military. He attended Washington and Lee High School in Arlington, Va., where he was a member of the junior ROTC unit. When he graduated he was the third highest-ranking cadet in his class. Choosing Virginia Tech to continue his military training was easy, and he was one of the students to arrive in Blacksburg via the famed Huckleberry Train.

As with most students of the World War II era, he was drafted a year after his arrival at Virginia Tech. He traveled to Camp Beale, Marysville, Cal., where initially he kept up his interest in rocks. The problem was he was shoveling them to create walkways. Fortunately, he was soon promoted to drill sergeant, then company clerk, but ended up in the hospital in quarantine with the measles.

Complications developed when his physicians discovered a cyst, causing him to stay in the hospital for 66 days and miss his company's orders to ship out to England. “I was left behind as a supply sergeant,” Gaddy says.

He was transferred to Fort Belvoir, Va., and attended its engineering officer school. Gaddy was commissioned a second lieutenant in the Corps of Engineers in November 1944, and was soon shipped to Italy where he served in a combat engineering company during the last two battles in this country. He remained with the Army for 29 years as a reservist, retiring as a Major.

As he was being commissioned and before he left for Italy, Gaddy literally married the girl next door, Marjory, from his hometown of Arlington, on Nov. 22, 1943. The two of them leased an apartment, and when they returned to Blacksburg after the War was over, they brought their first-born daughter Sharon with them, and delivered their second child, Stephen, soon afterwards.

Gaddy, now the father of two, graduated in 1948 from Virginia Tech and moved his family to Mammoth, W.Va., where he took a position with Warner Colleries Company. He performed much of the engineering work for the construction of the Emily Mine, and was named a section foreman. Five years later, he became a health and safety engineer for the U.S. Bureau of Mines, based in Norton, Va. Throughout the 1950s, he fought mine fires, investigated fatalities, and helped reduce the death toll to less than 1000 a year. To put this number in perspective, the fatalities had been closer to 1700 to 1800 a year, according to Gaddy, and today, if the mining industry hits 100, “it is awful.”

While Gaddy worked in Norton, he spent one day a week traveling 330 miles round trip to Blacksburg to pursue his master’s degree in mining engineering (MinE). He also used two summer sessions, and was able to take his second walk across the stage for a diploma in June of 1956. His research work for his thesis was on the absolute strength of cubical blocks of coal. He used his experiences in Norton where he was asked to design a new steel roof bolt support system. So, he prepared samples of various sizes and different characterizations of coal and transported them to Blacksburg for testing. “The letter formula we came up with is still taught in mining schools throughout the world,” Gaddy emphasizes.

In 1959, Gaddy joined the Chesapeake and Ohio Railway Company as a mining engineer at its Huntington, W.Va., location. Within three years he became the assistant engineer of coal properties, performing extensive investigations into the quality, quantity, and marketability of coal reserves of the C&O properties. When C&O merged with the Baltimore and Ohio Railroad, Gaddy was reassigned to its coal development office in Fairmont, W.Va., near Morgantown. Gaddy began driving some 1000 miles a week rather than move his family again.

So in 1968, he decided the time was right to start his own venture, the Gaddy Engineering Company, specializing in property management and coal consulting. The first few months were a bit frightening for the man used to getting a paycheck. The new company grossed about $300 a month for its first trimester. But then things started to click.

“I did everything connected with coal mining, especially coal reserve studies, estimating the amount of coal that might be on a property. I managed some 300,000 acres of property and probably consulted on another 300,000 for banks, individuals and land companies,” Gaddy says, by the time he retired in March of 2000.

During the peak of the company’s existence, Gaddy employed about 50 people. “During the 1970s, we grew so fast that I had difficulty in getting people who were trained to do the work. When the oil embargo ended in 1980, there was a downturn in his business.

“The Virginia Tech MinE graduate enjoys providing “good returns” to his clients over the 33 years he ran his company. “I have had the pleasure of making people happy by developing clients’ properties and giving them good returns,” Gaddy says. As he recalls, one of his customer’s told him: “Frank, for 25 years we’ve worked together. Anything you said was going to happen, did happen. Anything you said was not going to happen, did not happen.”

“That is the way I worked,” Gaddy says simply. “Kind thoughts are worth money to me.”

Gaddy continues to work as a consultant, devoting some 20 to 30 hours a week to his favorite clients. “I continue to thrive on my work,” says the octogenarian. “The mining industry is small and like a family. It’s not what you know, but who you know. I can pick up a phone and call a friend and have answers within minutes,” Gaddy explains.

Gaddy has always kept up his association with Virginia Tech, even to the point of insureing the school’s involvement in an annual coal trade show. When Gaddy noticed competitors of Virginia Tech’s MinE program were present at the equipment exposition, but the Hokies were missing, he persuaded Dick Lucas, the department head in the 1980s, to begin hosting a reception. During the reception, Virginia Tech would then honor its outstanding alumni in the coal industry. Today, those awards are presented at the annual mining and mineral’s scholarship banquet on campus.

Gaddy’s professional memberships include the following: Huntington Chapter of the West Virginia Society of Professional Engineers; W. Va. Society of Professional Engineers; American Institute of Mining, Metallurgical, Petroleum Engineers, including its membership chairman and president of its central Appalachian section; American Mining Congress, including the chairmanship of its roof control committee for eight years; W. Va. Coal Mining Institute, including its presidency in 1975; and Sigma Gamma Epsilon. Four Governors of West Virginia appointed him to the West Virginia Board of Registration for Professional Engineers. He served the board for 22 years and was its president for eight years.
When Clifton C. Garvin won the 1997 Ruffner Award from Virginia Tech for his service to the University, he was described as “a man for all seasons. A top student. A soldier. One of the nation’s preeminent business leaders. A dedicated volunteer who has given his time and talents to the betterment of the University.”

A native of Portsmouth, Virginia, Mr. Garvin earned both a bachelor’s and a master’s degree in chemical engineering from Virginia Tech in 1943 and in 1947, respectively. His education was interrupted during World War II when he served with the U.S. Corps of Engineers in the South Pacific, attaining the rank of Captain.

In 1947, the chemical engineer started his career with Exxon as a process engineer. In 1968 he was named to the Exxon Board, and four years later, he was named the company’s President. He reached the pinnacle of corporate America when he was elected Chairman of the Board and Chief Executive Officer of the giant petroleum company in 1975. He held this position until his retirement in 1986.

He has also retired as a board director from several other prominent companies: Citicorp and Citibank, Hospital Corporation of America, Johnson and Johnson, JC Penney Company, Inc., PepsiCo, Inc., and TRW, Inc.

He has served as a director of the Americas Society and as a member of the Council on Foreign Relations, Inc., The Business Council, The Business Roundtable, and the American Institute of Chemical Engineers.

Throughout his distinguished career, Mr. Garvin has always found time to serve his alma mater. He served on the University’s Board of Visitors from 1988 until 1996, exhibiting strong leadership skills and exceptional business acumen. His executive ability landed him the position of Rector of the Board from 1991 until 1996. He is also a member of the Committee of 100 of the College of Engineering, the Ut Prosim Society, and the Virginia Tech Foundation. He has served on the latter’s Board of Directors and is its current Chair.

Most recently, he co-chaired the University’s Capital Campaign, traveling across the country to meet with alumni and other friends of the University. The campaign was the largest fund-raising effort in the University’s history. The University far exceeded the expectations of the goal of $250 million, reaching almost $340 million.

Among his other achievements include three honorary doctorates: in commercial science from New York University in 1978, in engineering from Stevens Institute of Technology in 1982, and in humane letters from Georgetown University in 1985. He received the Distinguished Service Award from Texas Mid-Continent Oil and Gas Association in 1984 and the C. Walter Nichols Award from the New York University Graduate School of Business in 1985. In November of 1986, the government of The Netherlands named Mr. Garvin a Commander of the Order of Orange-Nassau.

He is married to his wife Thelma for 56 years and they have four children, 10 grandchildren, and one great grandson.
Leslie C. Gates

B.S., Civil Engineering, 1940

Beckley, West Virginia is one lucky town – it can claim Leslie C. Gates as a hometown boy.

Some 15 years ago, 10 of Beckley’s local professional and business leaders decided to establish a Beckley Area Foundation to provide for scholarships and other needs. Mr. Gates was one of the participants. They started with $1,100,000 from the Walker Foundation, and today the fund is close to $13 million.

Then two years ago, Mr. Gates became President of the Forward Southern West Virginia non-profit corporation, previously known as Beckley Downtown. With the 1940 Virginia Tech civil engineering graduate at the helm, five challenges were adopted to improve the community. The group has trained 127 middle school teachers in business practices in an effort to move West Virginia into national leadership in math and science technology in the K through 12 school system by 2006. They are also accelerating health care system improvement, working on the development of the business and technology I-64 corridor from White Sulfer Springs to Beckley, promoting tourism year round, and heightening the awareness of the importance of energy in the state.

The Mountain State has always claimed Mr. Gates’ heart. As with most young men in the 1940s, he served in World War II. After attending Virginia Tech as a member of the Corps of Cadets, he served as the Major Executive Officer of the 300th Engineer Combat Battalion through five battles in Europe. He was among those who crossed the English Channel into Normandy on D-Day Plus Three. But when the war was over, he hastened back to West Virginia to work with his father’s business, Ferguson-Gates Engineering Company.

Mr. Gates thrived in his new career. By 1958 he became the sole owner, but he realized he could not develop the business as he envisioned it by relying solely on West Virginia’s economy. For this reason, he expanded the mining activities to include the operating side. Later, he became involved in civil engineering by taking the first highway job in 1959. He added architectural planning, and new offices in Charleston and Beckley. Deciding that he needed to move his mining activities westward, he opened an office in Denver after securing a contract from Bechtel, the largest mining firm in the world. “This was a big break for us,” Mr. Gates recalls. He quickly followed this expansion with the opening of offices in Chicago, Ill., and Pittsburgh, Pa., and later Sydney, Australia. In 1961, he changed the name to Gates Engineering Company.

“I really wanted to build a firm that could compete. My motivation was pride for the state, and I was always irritated that so many of the state’s road commission’s projects went to out-of-state companies,” he says. And build a firm he did. Gates Engineering began working for banks, producing economic development plans to establish the viability of a loan. The company achieved an excellent reputation in this financial arena. “In fact, our company was one that the Bank of New York always recommended,” Mr. Gates remembers. “And today, my son’s firm regularly receives highway department jobs.”

And as Mr. Gates’ reputation increased, so did his involvement in professional societies. After serving as president of the West Virginia Society of Professional Engineers in 1951, he moved on to hold numerous positions in the National Society of Professional Engineers, including its presidency in 1974-75. He worked to enhance his profession, and one of the major accomplishments of the NSPE during his term was teaming with Senator Jacob Javitts of New York and persuading him to sponsor a bill that permitted the movement of retirement benefits from one company to another. The issue stemmed from what Mr. Gates called the “migratory nature” of the engineer. “The character of engineers is that they tend to move around a lot, especially in the early years of their career. They would often lose retirement benefits,” he explains. When President Ford signed the bill into law in the Rose Garden, Mr. Gates was one of the invited guests.

And another friend, Senator Robert C. Byrd of West Virginia, credits Mr. Gates with being instrumental in obtaining the new Robert C. Byrd U.S. Courthouse and Federal Building in Beckley. The address of the $40 million building just happens to be on Leslie C. Gates Place in Beckley.

Besides his many public service activities that keep him busy today, Mr. Gates remains as Chairman of his son’s firm, the L.A. Gates Company. He is married to Anneva Covey Gates, a physician.
James K. George, Jr.
B.S., Electrical Engineering, 1964

Jim George was inducted into three honor societies while an electrical engineering (EE) student at Virginia Tech. But the stellar student had more than studies on his mind, as he also enjoyed his summer job as “doorman and money collector” for a rock and roll band.

In addition, the Tau Beta Pi, Eta Kappa Nu, and Phi Kappa Phi member also presided over Virginia Tech’s Amateur Radio Association (his call letters are N3BB), and hosted one of the most popular campus radio programs on the student operated WUVT. His show, on “Wacky WUVT” as he refers to the station, aired 4 to 5 p.m., a prime time since classes ended at 4 p.m. and dinner started at 5 p.m. in the 1960s. He knew he had a rather large listening audience when one snowy day, while announcing his top 40 rock and roll program, he encouraged a snowball fight on the Drillfield. Some 3000 students got involved, and the DJ recalls he received one of his three probation-causing pranks were equally silly as he reflects — “locking some guys in their room, and dropping a water balloon on someone.” The problem was the “someone” was a town police officer coming to investigate a dormitory disturbance.

Mr. George had his share of fun as an undergraduate but he also recalls his years at Virginia Tech as leaving “a stark imprint” on his personality. “I really respected the honor code at Virginia Tech … and I think I graduated with a strong sense of integrity. I am sure I have made my share of mistakes but I have remained totally honest, and have valued the integrity at Tech a great, great deal.”

When Mr. George received his bachelor’s degree in 1964 he felt he had obtained a “tremendous grounding” in the engineering basics. “Life is a murky business and engineering is quantitative and precise. You always get an answer. I needed that structure.”

During his undergraduate days, he also was provided with a valuable lesson for his upcoming career. Following his junior year, he had taken a summer job at one of Dupont’s plants in West Virginia. “I designed and oversaw the installation of lights on a coal conveyor belt. I came home looking like a coal miner. I realized the chemical engineers were the kings and the EEs were the service providers at this company location. I needed to find a job where EE was a main focus.”

That he did. He spent 38 years with the semiconductor industry. The bulk of that time, Mr. George worked for Motorola's Semiconductor Products business in positions of increasing responsibilities. His first job with Motorola landed him in Phoenix, Ariz., where he also attended graduate school at Arizona State University’s EE Department. He earned his master’s degree while learning the various aspects of Motorola’s culture. “I realized my interest was in operations and with customer contact.”

After a stint away from Motorola, Mr. George returned in 1984 as the Manager of Reliability and Quality Assurance for its semiconductor business in Austin. Afterwards, his promotions came in regular intervals. He moved to the General Manager of the MOS Memory Products Division, to General Manager of the Digital Signal Processor Division, to General Manager of the Imaging and Storage Division, and to the Director of Strategy for the Wireless Systems Group. He served as a Corporate Vice President of Motorola for the last 15 years of his career until he retired in 2002.

“It was thrilling to be in a cutting edge industry … One needed to understand circuit design, device physics, materials engineering, and the end applications for increasingly complex devices which required a lot of software to enable them to do great things. I liked the multi-disciplinary requirement and the continuous learning. The field was wide open and there was no template to follow.” Mr. George reflects. His travels have taken him to 53 countries, logging well over three million flying miles.

Mr. George continually has taken time for his alma mater. Since 1991 he and his wife, Diana, have held season football tickets even though they lived in Austin, Texas. “We are certified lunatics,” he laughs. And they are avid members of the Committee of 100 and the Ut Prosim Society. He has served on both the Electrical and Computer Engineering Advisory Board and the College Advisory Board, and has chaired both. He also has chaired the College’s Microelectronics Committee.

Jim and Diana, a clinical social worker who specializes in substance abuse and emotional trauma, have three children, Juliet, Jimmy, and Chris. They return to their home town of Princeton, W.Va. often, and have started hiking portions of the Appalachian Trail. Mr. George also has started to write a book after being inspired by another engineering alumnus, Homar Hickam, who wrote October Skies. “I might title my book ‘American Graffiti Meets Homer Hickam’, ” he jokes. His book does share some aspects of American Graffiti but deals with growing up in a special time and in a special place with tremendous social upheaval underway.
Throughout the 1980s, Alexander Fortunatus Giacco received one award after another for his leadership role in the chemical industry. He had enjoyed a lucrative career at Hercules Incorporated, based in Wilmington, Del., holding management positions in research, production, marketing, planning and international aspects of the company. He served as its President from 1977 until 1987 and as its Chairman of the Board from 1980 until 1987, the year he retired from the company.

The accolades started in 1980 with The Financial World naming him as one of the ten Outstanding Chief Executive Officers in U.S. industry. In 1983, '84, and '85, The Wall Street Transcript dubbed Mr. Giacco the Chemical Industry's Outstanding Chief Executive Officer. The Financial World followed this tribute with its 1984 naming of the Virginia Tech 1942 chemical engineering (ChE) graduate as the Best Chief Executive Officer in the Chemical Industry. In 1986, The Wall Street Transcript again honored Mr. Giacco as one of three outstanding Chief Executive Officers in the Diversified Chemicals Industry. And in 1987, The Financial World repeated its 1980 award, providing Mr. Giacco recognition as one of the 12 Outstanding Chief Executive Officers in U.S. Industry.

Also in 1987, following all of these honors, the National Academy of Engineering named Mr. Giacco to its prestigious organization.

Born in San Giovanni di Gerace, Italy, the young Giacco moved to Meriden, Connecticut with his parents. He became a naturalized U.S. citizen at the age of 8. Following his graduation from Meriden High School in 1937, he chose Virginia Tech to pursue his chemical engineering degree. He would later return to Virginia Tech to serve as a member of its Board of Visitors from 1979 until 1987, spending the last three years as the Board's Rector. He remains a member of the College of Engineering's Committee of 100.

He has received five honorary doctorate degrees: business from William Carey College of Hattiesburg, Miss.; laws from Widener University's Delaware School of Law; business administration from Goldey Beacom College of Wilmington, Del.; humane letters from Mount Saint Mary's College of Emmitsburg, Md.; and a second law degree from The Catholic University of America in Washington, D.C.

After his retirement from Hercules, Mr. Giacco continued his affiliation with Montedison, S.p. A., of Milan, Italy, serving as its Vice-Chairman and Chief Executive Officer from 1988 until 1989 and as a member of its Board of Directors from 1983 until 1990. He simultaneously presided over HIMONT Incorporated of Wilmington, Del., holding the position of Chairman of the Board from 1983 until 1991 and Chief Executive Officer from 1987 until 1990. In 1991 he became the Managing Director of the Axess Corporation, a position he continues to hold today. Axess is a private company that invests in materials and process industries and provides management and advisory services. He is also the current Chairman of the Board, President and Chief Executive Officer of Rheometric Scientific, Inc. of Piscataway, N.J.

Among his social and civic awards, Mr. Giacco received Virginia Tech’s Distinguished Achievement Award in 1989, the 1988 Bergamotto d’Oro Award from the Lions International Club of Reggio Calabria, Italy, and the 1987 Distinguished Citizens Award from the Boy Scouts of America, Delaware-Maryland-Virginia Council. The Republic of Italy also conferred a title of honor, “Comendatore” on Mr. Giaco.

Mr. Giacco has also been nominated by Pierre B. DuPont as a Delawarean of the Century. In making the nomination (which remains to be decided upon), Mr. DuPont stated, “Business leadership alone qualifies Al Giacco as a Delawarean of the Century, but it was in the area of public affairs that we observed his major contributions to Delaware...Al Giacco provided leadership on three issues he saw as crucial to Delaware’s economic health: the reduction of the 19.8 percent income tax rate to stop the outflow of jobs; development of Delaware into a financial center to increase and diversify jobs creation; and the revitalization of downtown Wilmington as a center for commerce.”

Mr. Giacco was married to the late Edith Brown Giacco for 53 years. He has five children and 15 grandchildren.
Robert C. Gibson
B.S., Mechanical Engineering, 1961

Bob Gibson comfortably sits as “head of the household” in the Chairman’s seat at Clark Nexsen, one of the nation’s Top 500 architecture and engineering design firms. In the past decade alone, the firm has won 11 distinctive design awards under Mr. Gibson’s leadership. One of the most recent honors garnered was “Top 5 Office Buildings in Hampton Roads” for the Twin Oaks facility located at the Lake Wright Executive Center of Norfolk, Va.

Clark Nexsen, the largest design firm in the Hampton Roads area of Virginia, provides a complete package of architectural and engineering services. Its designs run the gamut of buildings: offices, schools, commercial, retail, recreational, manufacturing, industrial, and municipal, state, and federal government facilities. Some 30 colleges and universities, including Virginia Tech, have benefited from its professional wisdom.

Mr. Gibson and his firm share deep roots in Virginia. The Class of 1959 mechanical engineering graduate of Virginia Tech was born in Norfolk 64 years ago. At that point, the company he would eventually head was only 17 years old. Pendleton S. Clark founded the firm in Lynchburg, Va. in 1920. He carried the firm successfully through the Depression and World War II, and then opened the Norfolk office. Mr. Gibson joined the firm in 1961, and after 18 years, the ultimate tribute for the Virginia Tech Hokie occurred. He and others were officially recognized as partners, and Clarks’ business became Clark, Nexsen, Barbieri & Gibson. The slightly unwieldy name was later shortened to Clark Nexsen in 1996.

One year after his confirmation as a partner, Mr. Gibson led a bold new overseas venture for the firm. He directed the establishment of a new office in Madrid, Spain that enabled the company to better serve U.S. agencies in Europe, North Africa, and the Middle East. Mr. Gibson went on to serve as President/CEO and Director of the firm for 15 years at its home offices in Norfolk and in Charlotte, North Carolina from 1985-2000. The company thrived as one of the Top 200 international architectural and engineering design firms in the world. Besides being certified as a Professional Engineer in six states, Mr. Gibson is also a member of the Institution of Engineers in Ireland. Clark Nexen has performed projects in 32 foreign countries and continues its tradition of providing world-wide excellence to its clients from the company’s office located in Norfolk.

Service listings abound on Mr. Gibson’s resume. Citing a few highlights, he was the President of the National Society of Professional Engineers from 1988-89 and Chairman of the National Institute of Building Science from 1991-93. His distinguished service to Virginia Tech includes serving on the Committee of 100 for the College of Engineering since 1978 and the newly established Industrial Advisory Group for Minority Engineering Programs. He has also served on the Virginia Tech Scholarship Committee and on the Engineering Dean’s Advisory Committee.

Mr. Gibson has been an overachiever all of his life. In 1954, the Norfolk Chamber of Commerce bestowed upon him the Outstanding Teenager-Tidewater Award in 1954. Since then, he has earned consistent high honors such as the Virginia Engineer of the Year in 1979, named as a Fellow by the Institute of Engineers in Ireland in 1989, and received the Member of the Year Award by the National Institute of Building Sciences in 1998. He has been named as an Eminent Engineer Member of Tau Beta Pi and named as a member of the Steinman Council, N.S.P.E. Education Foundation—both since 1987. Mr. Gibson is currently serving as Chairman of the N.S.P.E. Council of Fellows until 2003.

Under the leadership of one-of-a-kind engineer, Bob Gibson, the “House That Clark Built” is thriving in Virginia as it grows and prospers into the new millennium, adapting to new technologies while reaching out to a global market.
George R. Goodson, Jr.
B.S., Mechanical Engineering, 1949

Forty-nine years ago, George R. Goodson, Jr., started his career with Warwick Plumbing and Heating, and quickly climbed into the executive ranks. In 1983 the Virginia Tech mechanical engineering graduate was named President, and six years later, Chairman. He continues to hold this position and his son Royden, also a Hokie with a civil engineering degree, serves as President. His second son, Pax, a graduate of MIT, is the Executive Vice President. Goodson was associated with another Virginia Tech mechanical engineering graduate, Hobart Speegle, Jr., when they founded Warwick Air Conditioning in 1958, a company Mr. Speegle subsequently owned until his retirement.

The Goodson team has witnessed its company grow to become one of the largest mechanical contracting firms in Virginia, grossing upwards of $50 million annually. The range of mechanical contracts extends from churches, schools, and hospitals to piping systems for water treatment plants, paper mills, high pressure air systems for NASA, and nuclear clean piping systems for Newport News Shipbuilding. In 1989 the company was named to the distinguished list of Top 10 suppliers by Newport News Shipbuilding.

Born in Newport News, Va., George's father worked for the Newport News Shipyard. The older Goodson would often take his son, an aspiring engineer, to the massive facility where he was fascinated by the ship construction. During summer breaks from Virginia Tech, he was able to work in the shipyard on hydraulic engineering and engineering technology projects. To this day, he remembers a granite monument in the shipyard engraved with the words: “We shall always build good ships, at a profit if we can, at a loss if we must, but always good ships.” It is a principle he has applied throughout his career with his construction contracts.

Mr. Goodson's fascination with engineering led him to Virginia Tech in 1945. As a student, he was a member of the Corps of Cadets, achieving the status of Distinguished Military Graduate. “The Corps taught me discipline and regimentation which I needed. It didn’t solve all of my problems,” Mr. Goodson laughs, “but it helped.”

His other activities at Virginia Tech included membership in Omicron Delta Kappa, Pi Tau Sigma, Phi Delta Epsilon, and the German Club. He was the treasurer of his class of 1949, and he volunteered as manager of the baseball team for three years. "We had good teams and a good coach in Red Laird. I enjoyed being able to get outside for the Blacksburg springtime. I could also get excused from classes on occasion!"

The college days ended in 1949 when Mr. Goodson received his bachelor's degree and had to find a job. “It was a pretty scary time,” he recalls. He began working in Pennsylvania for the Philadelphia Gear Works as a sales engineer. He stayed for two years until the Korean War interrupted his life. With an Air Force Reserve commission, he was called by Uncle Sam to serve 21 months. After a year in electronics school studying radar, he did not have enough time to go to Korea, and so he spent the remainder of his time in Montana.

Upon his discharge, he decided to return to Virginia, and in 1953 started his career with the company he now chairs. In the early years, he worked in the field as a foreman and later as an estimator and project manager. "I was fortunate to be able to work in the field. I liked working with my hands, and the combination of my college education and field experience served me well in managing the company. "To this day, I have great respect for the working man and the skill he brings to the job," Mr. Goodson says.

He supplies continuing support to Virginia Tech. He recently funded the Goodson Learning Center in the Mechanical Engineering Department. This center is specially equipped with an area for students to study with computer terminals, an office for the ASME student group, and a place to relax. He also established a professorship within the department that is now held by Dan Inman, director of the Center for Intelligent Material Systems and Structures. Mr. Goodson is a founding member of the Ut Prosim Society. He has served on the board of the Virginia Tech Foundation and on the Advisory Board of the Committee of 100.

Professionally, he has held membership in the National Association of Professional Engineers, the American Society of Mechanical Engineers, the American Society of Military Engineers, the American Society of Heating, Refrigeration and Air Conditioning Engineers, and he served as a Director of the Associated General Contractors of Virginia. "I have always felt a strong obligation to give back to the community that has given so much to me," Mr. Goodson says.

Among his civic offices, he has served as a past president of the Peninsula Fine Arts Center, the Virginia Living Museum, and the Warwick Rotary Club. He is currently serving on the board of the Virginia Air and Space Center, and is Chairman of the building committee for the Virginia Living Museum. He has served as elder and deacon in his Presbyterian Church. He cites his continued association with the Virginia Living Museum as most rewarding. “When we started the VLM over 30 years ago, it was the first in the state. We are now constructing a new $23 million facility that will serve over 400,000 school children and visitors annually. It will be one of the finest of its kind in the country.”

“Virginia Tech deserves a lot of credit for my success in business. The education I received at Tech provided me with the working knowledge needed when starting out in industry. It taught me sound engineering fundamentals that have remained with me through the years. Also, the friendships made at Tech and the association with fellow Techmen in business and with the community have meant a great deal to me. To this day I love returning to campus to see what is going on and to catch up with lifelong friends,” he reminisces.
As a boy, Chuck Gordon and his sister were corralled into the family car on football game days and traveled the more than 100-mile one-way trek to Virginia Tech. In the 1950s, that meant meandering along a two-lane, Route 11 for hours, watching a three hour game, and then arriving back home in Johnson City, Tenn., much later the same day to avoid a motel bill. And Chuck loved it.

“As a little guy coming to the games, I saw Virginia Tech as a military school. I loved to watch the Corps march by and all the other pre-game activities,” Mr. Gordon recalls. His father’s love of the University was contagious, and the visits helped the young boy define his life-long game plan well before he was accepted into the industrial engineering (IE) program at Virginia Tech. “Dad impressed upon me that I needed to be a good student in order to get into Virginia Tech. He said industrial engineering would give me a good education for the family manufacturing business. So I concentrated in math, science, and physics, applied only to Virginia Tech, and knew that when I graduated, I would come back home to our family business.”

By 15, he had gotten his feet wet with Gordon’s Inc., the furniture manufacturing company established by his father, also an IE graduate, after World War II. Their clients soon included Macy’s and Marshall Fields, along with furniture retailers throughout the U.S. and Canada. The young Gordon would report to work after high school and during the summer.

“I worked from one end of the factory to the other, from the lumber yard to the finishing room. I worked with individuals who were highly skilled, but usually not well educated. They loved and respected my Dad because he spent a lot of time in the plant, so they readily took me under their wings. It was fascinating to see how boards of raw lumber could be made into beautiful pieces of furniture,” Mr. Gordon says.

By the time he enrolled at Virginia Tech, he understood manufacturing processes, had an insider’s knowledge of what he was studying, and possessed a private pilot’s license. After he graduated in 1970, he helped double the size of the family company within about 15 years, from less than 200 to more than 400 employees. “We became well-known for our unique designs and the quality of our occasional furniture. These are tables and cabinets for the living room areas,” Mr. Gordon says.

In the early 1970s, as the company’s vice-president, he added some business courses to his skills, enrolling at the Executive Institute at the University of North Carolina, and later at Harvard. “This gave me the business background that allowed us to grow our company through marketing and managing our unique brand and style,” he adds. He became president in 1982. Having attained his Airline Transport Pilots rating, he was able to fly the corporate plane to meetings around the country, influencing the company’s growth. By the early 1980s, his two brothers were working at the family business, and Chuck recalls “it was a really good time.” With their father, they
also owned the Tri-City Beverage Corp., and a few other entities, so they formed a holding company, Bydand Corp. Chuck became Bydand’s vice-president in 1984, and president in 2002.

While Mr. Gordon was running the furniture company, another prominent Virginia Tech IE graduate Charlie O’Brien, who was then the executive vice-president of Thomasville Furniture of North Carolina, owned by Armstrong World, approached him with a business proposition. The alums, also both members of the Virginia Tech German Club, held several conversations about a convergence of their companies.

“Retailers had advised Charlie to talk to me about our tables, and the possibility of supplying them to Thomasville,” Mr. Gordon relays. The dialogue led to Thomasville acquiring Gordon’s Inc., and Mr. Gordon stayed on for another nine years. Within the first year and a half he was given the responsibility for another one of their subsidiaries, Thomasville Upholstery Inc., for a total of six manufacturing plants. When Mr. O’Brien retired, Mr. Gordon took his place, in charge of 17 Thomasville facilities in four states with over 4500 employees.

Armstrong sold Thomasville in 1996 and a year later Mr. Gordon returned to his family’s entrepreneurial roots, and acquired the High Point, N.C., located Giorgio Collection, Ltd., a line of high-end Italian furniture produced in Italy and marketed in the U.S. “I had always kept in touch with some Italian furniture friends of mine, so we designed a line of bedroom and dining room furniture that had a well defined European contemporary style. Since most of the retailers knew me, we were able to quickly advance our collections onto their floors,” Mr. Gordon says, and the furniture that was dedicated to a special niche of clients is still operating today. However, he decided in 2006 to sell his ownership of the company, and returned to Johnson City to run Tri-City Beverage.

Founded in 1949 by his father, Tri-City Beverage, developer of the Mountain Dew brand, has also produced the popular energy drink Dr. Enuf since the year it opened for business. A bottle of Dr. Enuf is advertised as having 260 percent of the daily requirement of B1, 90 percent of vitamin B3, and 80 percent of potassium iodine.

In the past four years, Mr. Gordon has tripled the output of this plant, and the business has more than doubled. Tri-City beverage is also known now as contract bottler, including such well-known brands of Canada Dry, White Rock, A&W Root Beer, and SunDrop. “We have been able to maintain a busy schedule throughout this weak economy,” he acknowledges.

Mr. Gordon says he is “happy to be back” in one of the same family businesses he knew as a teenager. “As an entrepreneur, I can continue a productive work schedule and still have time for personal interests. The manufacturing and marketing challenges are now more fun than they are work, and I can do the other things when I want.”

One of the “other things” is his love of music. As a teenager, he appreciated the music of the country and mountain folk who worked in the furniture plant, and he also played in a rock & roll band in high school. When he returned to Johnson City after graduating from Virginia Tech, he took an interest in the violin that he often turned into a fiddle. He successfully auditioned for the local symphony, playing the more classical style and remained with the highbrows for the next six years. But every once in awhile, he could still be heard picking on the five-string banjo or bluegrass guitar.

After a lengthy hiatus from playing music formally, one of his fellow musicians from his high school band days called him to play at their 1998 reunion. This gig inspired the two of them to regroup, adding some other serious musicians, and formed The Spirit of Soul Dance Band, an 11-piece group specializing in the R&B and soul music of the 60s and 70s. Chuck and his friend Bill still play both lead and rhythm guitars as they did some 45 years earlier, and the band is fast becoming one of the most popular groups in the three state region surrounding East Tennessee.

Mr. Gordon and his wife Betsy remain active in a number of civic projects as well as Virginia Tech endeavors. Among the latter, they serve on the National Campaign Steering Committee for the Campaign for Virginia Tech, acting as campaign co-chairs for the Greensboro/Winston Salem Region. It is difficult to find a family more supportive of Virginia Tech than the Gordons, with three generations of the family serving as members of the University’s prestigious Ut Prosim Society.

As his father did, Mr. Gordon passed on his love of Virginia Tech to his twin children, “dragging them to the football games” at an early age but on a much better highway. His son Charles, graduating in 2004, received a masters in marketing and research in 2007 and is employed at Moog in Blacksburg. His daughter Elizabeth graduated in 2004 and the Edward Via College of Osteopathic Medicine in 2008, and is now practicing medicine in Tennessee. For their twins’ graduation presents, Chuck and Betsy presented the University with a mobile sports medical X-ray imaging unit that can be transported to various athletic venues.

Chuck is a member of the Engineering Department’s Committee of 100, the ISE Academy of Distinguished Alumni and has served on the ISE Advisory Board. He is a past member of the Virginia Tech Foundation Board and its Alumni Board, and has been a long-standing member of the German Club Alumni Foundation Board.

Back home, Mr. Gordon has been active in Rotary International and is a Paul Harris Fellow. He was on the advisory boards of the Johnson City Medical Center, First Tennessee Bank and the National Association of Manufacturers. In N.C., he served on the High Point Salvation Army Advisory Board and as president of Grandfather Golf and Country Club. He is a Master Mason and Past Master.

Chuck Gordon’s induction into the Academy of Engineering Excellence comes 12 years after his late father’s, a member of the inaugural group, and they represent the first father-son membership in the Academy.
When Charles O. Gordon, Sr. was a young man, he quickly learned about entrepreneurship. Mr. Gordon sold Burpee seeds, magazine subscriptions, Morton’s salt, and Hershey candy bars in lieu of an allowance from his folks. By the time he was 12 years old, he was working summers carrying brick and mortar, and trained as a carpenter’s helper.

After he graduated from Virginia Tech with his degree in industrial engineering in 1942, he served his country as a Major in World War II, commanding the first and only glider combat unit. For his heroism in combat, he earned a host of awards, including the Distinguished Flying Cross, the Presidential Citation, the Silver Star, the Air Medal, the Combat Infantry Badge, Airborne Infantry Wings, seven Battle Stars, and three Bronze Arrowheads for Airborne invasions.

When Mr. Gordon returned from the War, he established Gordon’s Inc., a furniture manufacturing company. He was known to load a pick-up truck himself and attend furniture markets to introduce his pieces to buyers. Soon, his clientele included Macy’s and Marshall Fields, and retail outlets in the United States and Canada.

Mr. Gordon points to his engineering education as a means to his success. He is quoted as saying, “I never had an engineer on the job while building my plant.” He drew the plans, and supervised the construction and the installation of the electrical system, boilers, and the heating system, and a range of manufacturing equipment. He was able to do all of this work because the industrial engineering curriculum in the 1940s included courses in civil, electrical, and mechanical engineering, as well as in business.

As his success continued, Mr. Gordon ventured into a number of different businesses, and most people are familiar with one of his most famous products. His company, Tri-City Beverage Corporation, developed the soft drink Mountain Dew. Mr. Gordon actually designed the original bottle, a collector’s item today. He continues to serve as the Chairman and Chief Executive Officer of the Byland Corporation, and Chairman of the Tri-City Beverage Corporation and Peace River Citrus Groves, Inc.

Mr. Gordon has provided numerous gifts and services to his alma mater. He is the man most responsible for the original planning of the German Club on campus, and its recent addition. He funded an endowed professorship in the Industrial and Systems Engineering Department, and served as Rector of Virginia Tech’s Board of Visitors and as Director of Virginia Tech’s Education Foundation. He is a Past President of the Alumni Association and the Student Aid Association. He is a recipient of the Ruffner Medal, the highest recognition given by the University. In 1994, he received the College of Engineering’s Distinguished Alumnus Award.

His civic honors include: charter member and Past President of the Lions Club, a past member of the Rotary Club, a Master mason, a member of the York Rite, Scottish Rite, and a lifetime member of the Shrine. He is a Knight in the Sovereign Military Order of the Temple of Jerusalem. He has served as the Mayor of Johnson City.

With the Salvation Army, he has served as a member of its Advisory Board for 40 years and 12 years as its Chairman. In 1972 he received the Salvation Army National Award, “Others,” and in 1989 he was presented with the distinguished William Booth Award. In 1983 he was made an honorary member of the Salvation Army Advisory Board.

He is married to the former Evelyn Anderson of Marion, Va., and they have six children and ten grandchildren. Two sons, Charles, Jr., and Jack, are also graduates of Virginia Tech’s College of Engineering.
John Grado

1951, Industrial Engineering and Operations Research

John Grado was born in Bristol, Va., the son of an Army recruiting officer. He skipped second grade, graduated at the top of his high school class, and entered Virginia Tech at 16 in 1944. During his first quarter on campus, he earned all “As,” but left the University at 17, enlisting in the U.S. Navy in 1945 during World War II.

“When I returned to VPI two years later, I was not the same. I was more interested in a social life after being in such a structured military environment. I earned all the grades I needed to graduate in industrial engineering (IE), but the straight As were a thing of the past,” he recalls.

After graduation, he moved to Longport, Pa. to work with U.S. Steel for a few months. But a job offer from Monroe Calculating Company back in his hometown of Bristol lured him away, and he spent the next three years in the Commonwealth. When the West Virginia Pulp and Paper Company offered him the challenge of creating automated lines to increase finishing room productivity at its Luke, Md. facility, the young Grado jumped at the chance. He developed a new technique for the paper mill, designing production lines that used his IE skills.

In 1956, Mr. Grado met the person he refers to as his role model in the business world, George Wallace of the Fitchburg Paper Company. When he was offered a job as the company’s first Chief Industrial Engineer, Mr. Grado accepted and moved his family to Fitchburg, Mass. He soon became the President of its Decotone Division, and as he says, “found it to be an industrial engineer’s paradise... because everything was done wrong.” Within six months, he had turned the unprofitable division into a money-making operation. By the end of the year, Mr. Grado’s group was turning a six-digit profit, and he was named an executive vice-president of the company in 1964.

The productivity enhancements at the Fitchburg Paper Company, due to Mr. Grado’s innovations, became so dramatic that people started running out of work. But these people were doing their jobs so well that Mr. Grado did not want the streamlining to be the cause of downsizing the company. The company decided to cut numbers through retirements, voluntary relocations, or attrition.

Five years later, Mr. Grado was named Executive Vice-President of the parent corporation. In 1967, Mr. Wallace determined he was ready to sell the company, and Mr. Grado located the new buyer, Litton Industries. Litton selected Mr. Grado, then only 35 years old, as the new Corporate Vice-President of Litton. He built the group into a $300 million operation under Litton. After almost two decades, Mr. Grado recognized the chance to own his own company. Litton had decided to focus on high technology, and especially electronics; manufacturing paper did not fit neatly into this category. Soon, Mr. Grado became an entrepreneur on a grand scale, and named his new company Technographics in 1983.

Mr. Grado was dubbed “a local hero” by the Greater Fitchburg Chamber of Commerce for bringing the world headquarters of Technographics to the small Massachusetts town, and for returning the company to local ownership. In 1984 he was chosen Businessman of the Year for the county.

During his career, Mr. Grado has served on the Board of Directors of a number of organizations including: the Fitchburg Gas and Electric Company, the First Safety Fund National Bank, Fitchburg State College, North Worcester County United Fund, American Red Cross, Applewild School, Secondary Materials Association, George Wallace Foundation, Charitable Trust of Boston, American Paper Institute, and the Oak Hill Country Club.

Mr. Grado retired in 1999. He is a member of Virginia Tech’s Ut Prosim Society, the College of Engineering’s Committee of 100, the Industrial and Systems Engineering’s Advisory Board, and a member of its Academy of Distinguished Alumni. He and his wife Corrie reside in Marco Island, Fl.
Dr. William Grossmann
Class of 1958, BS, Aeronautical Engineering
Class of 1961, MS, Aerospace Engineering
Class of 1964, Ph.D., Aerospace Engineering

Some four decades after William Grossmann received his doctorate in aerospace engineering (AE) from Virginia Tech, he continues to practice on the cutting edge of research, currently splitting his time between developing technology towers of excellence for the National Institute of Aerospace (NIA) in Hampton, Va., and creating worldwide business opportunities for the global Science Applications International Corporation (SAIC) from his home in Berlin, Germany.

His varied career is full of firsts, garnered at some of the world’s most prestigious scientific organizations. As examples, he formed the computer science center at the College of Staten Island of the City University of New York, was part of a group at the Max Planck Institut für Plasma Physik that discovered a new form of fusion plasma heating, and developed an initiative for upgrading the information technology (IT) infrastructure at Asea Brown Boveri Germany (ABB) Ltd., an international leader in power and automation technologies.

Born in Richmond, Va., Grossmann learned excellence early in his life. As a Boy Scout, he rose to the rank of Eagle Scout and became a member of the selective Order of the Arrow. In 1954 he was the highest-ranking scout in Virginia, allowing him to represent the group at the opening of the Virginia General Assembly during the turbulent time of school integration.

He also excelled at swimming, earning an athletic scholarship to attend Virginia Tech. He eventually became co-captain of its swim team, and he was voted outstanding swimmer in the Southern Conference in 1956, 1957, and 1958. When he returned several years later for graduate studies, the athletic director at the time, Frank Moseley, asked him to become the interim coach. Many years later, in 1991, he would become the first swimmer inducted into Virginia Tech’s Athletic Hall of Fame.

“I chose Virginia Tech because it was the best educational bargain in the country, it had the Corps of Cadets, and I could swim competitively.” After he received his AE bachelor’s degree in 1958, he went to work for NASA Langley as an aerospace technologist, but took leave in 1960 to start his master's degree.

“When I arrived back on campus, I ran into Bob Truitt, head of the AE department who immediately offered me a Space Act Fellowship,” he remembers. It was indeed a red letter day as that was also when he ran into Moseley who explained his old swimming coach was taking a sabbatical, and offered him the position on the spot.

Within four years he secured both his master’s and doctorate, receiving the Virginia Tech Sigma Xi Award and NASA’s Dissertation Award. The latter provided him with a one-year sabbatical with pay, and he found himself gravitating to New York City’s Greenwich Village and a post doc position.
with New York University’s Courant Institute of Mathematical Sciences. The Courant Institute, described by Grossmann was home to “the cream of the mathematicians who emigrated from Germany before WWII and landed in Greenwich Village.

“I got so turned on by the work in the mathematical physics area, studying the stability of controlled thermonuclear fusion plasmas, that I left NASA permanently and stayed in New York for half of my salary,” he willingly admits. At the end of his post doc, he accepted a position of assistant professor at City University’s College of Staten Island and was asked to form its computational center. “It was the very beginning of the large scale computing era and only a handful of Cray 6600 supercomputers had been sold. IBM became a partner with us, and I needed to find the appropriate configuration that allowed growth,” Grossmann says.

Earlier he was awarded a NATO Fellowship in 1965 to spend the summer in Holland, and he began a long-term relationship with scientists at the Max Plank Institut in Munich, Germany. He interrupted his tenure track position at City University to become a senior scientist at the European Institute in 1969. For the next five years his challenges led him to co-discovering and developing a revolutionary new concept for radio frequency wave heating of thermonuclear plasmas.

He returned to New York in 1974, as Research Professor and Associate Director of Courant Institute’s Magneto-Fluid Dynamics Division to expand its research activities in fusion plasma physics. This expansion allowed the institute to become more involved with national laboratories such as Lawrence Livermore and Los Alamos where major fusion experiments were underway. As a research professor of plasma sciences, he interacted with a number of government study panels and other national and international mathematical and physics organizations.

On one particular occasion, he was asked to consult for Science Applications International Corporation, and he met the corporation’s founder Robert Beyster. “He is a visionary entrepreneurial individual, and I started consulting for SAIC, spending about three months a year in San Diego,” Grossmann says. Also during this time Grossmann was elected to the position of Director of the Summer College on Plasma Physics at the Center for Theoretical Physics in Trieste, Italy, a position he held from 1983 until 1987.

As Grossmann approached the often reflective age of 50 in 1987, he promised himself he would do something different. So, after eight years of Beyster’s cajoling him to join SAIC full time, he accepted, provided he could remain in his beloved New York City. He became vice president and chief scientist for SAIC’s applied physics operation in McLean, Va., yet he retained a foothold in New York as an adjunct professor of applied science at NYU until 1990.

“As my involvement with SAIC matured, I saw a host of challenges and rewards. I decided to move with my wife Judith to Washington, D.C. in 1990,” he reveals. The move allowed him to become the manager of a number of large Defense Advanced Research Projects Agency (DARPA) funded SAIC projects involving the use of concurrent engineering and simulation based design approaches to streamlining DoD systems acquisition processes.

Headhunters followed his career and they successfully persuaded him in 1995 to take a leave of absence from SAIC and join ABB, Ltd., as a program manager in its Heidelberg, Germany Corporate Research Center. He was responsible for engineering systems integration.

After studying the company’s operations in Germany, Grossmann essentially created his next position. “I made the case to ABB’s Board of Directors that the 67 ABB offices in Germany with some 30,000 employees needed to share engineering data and information over a mutual network. I showed them what the return on investment would be,” he says. His presentation secured him the position of Chief Information Officer of ABB Germany in 1998. In 2000 he became the ABB Kraftwerke AG’s Chief Knowledge Officer and Director of IT. When ABB Kraftwerke was absorbed in a joint venture between ABB and ALSTOM Power, and Grossmann was named its director of business IT alignment in December of 2000 with an office in Paris.

A horrendous skydiving accident sidelined Grossmann for about a year when he was 62. During his recuperation time, SAIC asked him to end his leave and rejoin as a member of the energy solutions sector. He did so in March of 2002 as a vice president of technology, responsible for developing business opportunities in energy with emphasis on power generation throughout Western Europe and the Middle East. Subsequently he became vice president of technology and chief scientist for SAIC Consulting in London, a position that outlasted the former by more than two years.

Since June of 2005, Grossman has served as the director of business development for SAIC Services, Inc., responsible for business development in Europe, the Middle East and Asia. And his career also found its way back to Virginia Tech as he and his wife established the Charlie L. Yates scholarship for leaders in aerospace and ocean engineering (AOE) in 2006. They became members of Ut Prosim in October, 2007. Grossmann is currently an adjunct professor in Tech’s AOE department.

Moreover, following one of his class of 1958 football alumni reunion weekends, Robert Tolson, an academy member and North Carolina State University’s Distinguished Langley Professor at the National Institute of Aerospace, suggested Grossmann consider working with the NASA Langley spin-off organization. Grossmann spent several months in 2006 and 2007 helping to develop technology business opportunities for NIA in systems engineering, advanced materials, and unmanned autonomous vehicles.

Grossmann continues to work with SAIC and NIA dividing his time between Berlin and Hampton, Va. Obviously, at 71, Grossmann is still seeking challenges.

Grossmann has two children from a previous marriage, Alexander and Simone.
Jack Guynn
Industrial Engineering; BS, 1964

Policymakers on the Federal Reserve’s interest-rate setting Federal Open Market Committee (FOMC) are primarily Ph.D. economists, but there are exceptions, including Virginia Tech’s own industrial engineering (IE) graduate Jack Guynn.

Guynn, who is president and chief executive officer of the Federal Reserve Bank of Atlanta, graduated from Virginia Tech in 1964, and he has spent his entire career with the Federal Reserve Bank.

Why would an IE graduate go to work for the nation’s central bank? “I chose the Fed because it was clear in 1964 that the banking industry had never really had the benefit of an engineer’s way of thinking about things. Banking, compared to other industries, was fertile territory for an engineer.”

Guynn’s early successes, including the design and installation of some of the Fed’s first computer programs for processing checks, gave him an early boost in his career. He went on to hold a wide variety of assignments in the bank, assuming his current position as its 13th president and chief executive officer (CEO) in January of 1996. In this position, the IE-trained president is in charge of all of the bank’s activities, including monetary policy, supervision and regulation, and operations.

Guynn and other presidents of the 11 additional Federal Reserve Banks in the U.S. serve on the FOMC, meeting every six to eight weeks in Washington, D.C. Together with Ben Bernanke (Alan Greenspan’s successor) and the other six members of the Federal Reserve’s Board of Governors, they seek to keep prices stable and economic growth at its maximum sustainable rate. They are decision makers who adjust certain interest rates, as needed, to help guide the U.S. economy.

Guynn’s job with its immense responsibility for economic policy making, combined with the other demands of running an organization of some 2,600 employees in six southeastern cities, is a demanding one.

Guynn is one of six non-Ph.D. economists on the FOMC. Assisting him with his study of economic issues and policy options is a staff of 24 Ph.D. economists and a large analytical support staff at the Atlanta Fed. Guynn says that although he has been involved in the bank’s economic briefings for more than 35 years, the issues are always changing and there are always new things to understand and to take into account.

Guynn is a self-proclaimed pragmatist, and explains that he thinks part of his success in economics stems from his appreciation of economist Herb Stein’s “aversion to economic jargon. Stein tried to make economic ideas understandable to everyone. I also appreciated his open-mindedness. He (Stein) once claimed he was a member of the ‘Don’t Know’ school of economics.” To continually update himself on current issues and unfolding events, Guynn reads the Wall Street Journal and the Financial Times daily, as well as a host of other technical papers, e-mails, and other communications from business people.

Guynn gives much of the credit for his success to his parents, both long-time public school teachers who lived in a rural community near Staunton, Va. “I lived a very simple life growing up, without the many distractions that young people often face today. I hunted and fished, and was a member of the Boy Scouts and the Church Youth Group. I probably didn’t realize it at the time, but it was wholesome and a very special way to grow up.”

Today’s bank president once earned his spending money from a paper route and worked for the county school system’s maintenance department, where he painted school houses, shoveled coal to restock the school coal bins over the summer, and did some other not-so-glamorous jobs.

Guynn has fond memories of growing up in a modest apartment complex that was formerly an old Army barracks. He recounts that the old army post that served as a World War II medical complex and rehabilitation center was later given to the county government to be used as a high school and as living quarters for teachers and school administrators. “And although the spartan apartments had no heat after about 9 p.m. each night, and a glass of water next to my bed would often be frozen in the morning,” he says, “it was a fun and wholesome environment in which to grow up.” Those former barracks outside Staunton served as a precursor to his Corps of Cadets’ lifestyle while he attended Virginia Tech’s College of Engineering. “The corps provided me with a continuation of the discipline and integrity that I grew up with,” Guynn says.

He chose industrial engineering because of the opportunity to blend the traditional engineering with business issues and problem solving. The IE training provided a background for Guynn to develop his management style. Following his undergraduate work, Guynn went on to earn a master’s degree in management at Georgia Tech and completed Harvard’s Business School’s Program for Management Development.

Working in a public institution, Guynn readily admits that the “biggest challenge” is to overcome the obstacles of working where the bottom line is not easily measured. Employees need to perform truly creative work, yet public entities like the Fed cannot offer the compensation and the big bonuses that are often available elsewhere. Overcoming these challenges and attracting “some of the best and the brightest” young people to come to work at the Federal Reserve is one of Guynn’s priorities. “I’ve tried to create a culture that allows bright young people to experiment and try new things, and learn and grow as fast as they can. I had that opportunity and that’s why I stayed.”

At this stage of Guynn’s life, he thought he would be “ready and able to kick back” but he finds he is “busier than ever.” Part of his time is devoted to giving back to the community. In recent years, Guynn has been active in the United Way of Metropolitan Atlanta, serving as chair of its board of directors and leading the organization’s 2004 funding campaign. In addition, Guynn serves on ex-President Jimmy Carter’s Board of Councilors. He also serves on boards of trustees for Furman and Oglethorpe universities, Virginia Tech’s IE advisory board, and the board of trustees for the Georgia Tech Foundation.

Which proves the adage, “If you want something done, ask a busy person.” Or as Atlanta homebuilder John Wieland has said of Jack Guynn, “Virginia Tech produced a nice human being.”
In 1967, when Charlie Harris was only 17 years old, he earned money for college by working as a school bus driver. Only two weeks before the beginning of his senior year, he learned to drive the large yellow school bus by piloting it around the dirt roads on his family farm in Pittsylvania County, Va. He was then responsible for driving his own peers as well as elementary school students on the 18-mile one-way trek to Dan River High School.

Tenacious as ever, Dr. Harris is still a driving force today. He leads some 800 scientists, engineers, and technicians working in 21 disciplinary research branches as the director of research and technology at NASA Langley Research Center in Hampton, Va. His ground transportation skills have graduated to space travel in support of NASA's mission in aeronautics, space operations, and space exploration.

The father of three children, Dr. Harris admits today that he would never have entrusted his offspring to a teenage bus driver, especially since his employment was complicated by the advent of desegregation. He recalls that he had to take control of more than a few stressful incidents, but he was determined to keep order on his bus and earn his $67.50 a month.

His work ethic also allowed him to develop effective time management skills. After graduating high school and enrolling in Danville Community College, he took a job working 4 p.m. until midnight as a textile machine operator, making $2.05 an hour. He had aspired to this position since it paid 15 cents an hour more than the ordinary day laborer at the local plant. “One of my gifts is that I am a quick study and very efficient. If I could get all of my work done, then I could study on the job,” he says. His savings during these two years at Danville Community College covered his expenses when he later entered Virginia Tech after earning his associate degree in pre-engineering.

When he arrived at the Virginia Tech campus in Blacksburg as a junior, he heard a presentation on aerospace engineering, and it sounded like “an exciting field” although he admits with a smile that he “had no idea why airplanes were able to fly.” He checked out an aviation book from the library, and after reading it, thought he “would never be able to master the principles of flight.”

“It was a grand adventure for a boy coming from the farm, and I was in awe of the Virginia Tech campus,” he reflects.

When he graduated in June 1972, the country was in a recession and the Apollo and supersonic transport programs had just been canceled. “Aerospace engineers all over the country were being laid off,” he recalls, so he opted to earn his master’s degree in engineering science and mechanics that he completed in September 1973. Not only did he earn his master’s degree during
In NASA’s Engineering and Safety Center (NESC), leading project manager of the National Institute of Aerospace. Dr. Harris spent two years as the two organizations to partner and to share ownership NASA Langley have a strategic partnership that allows the NIA and the entity created to conduct leading-edge aerospace research (NIA), a non-profit research and graduate education entity. The NIA and NASA Langley have a strategic partnership that allows the two organizations to partner and to share ownership of intellectual property. Dr. Harris spent two years as the project manager of the National Institute of Aerospace.

In 2000 Dr. Harris was promoted to the deputy directorship of NASA’s Structures and Materials Competency. From 2003 until 2006 he was a principal engineer in NASA’s Engineering and Safety Center (NESC), leading part of the space shuttle return-to-flight investigation after the Columbia accident. “This work was the most challenging of my career at NASA. I led teams of people who were the best in the agency. We had to pull together everything meaningful we had ever learned in our careers, and tackle really challenging technical problems. Our work allowed the space shuttle to return to flight,” Dr. Harris says.

Next, he led an independent investigation of the cracks found in the liquid hydrogen feed line to the space shuttle orbiter’s main engines. His team developed a high fidelity crack detection method that was duplicated at the Kennedy Space Center, and used to inspect the flow liners of the orbiter Discovery. “This method led to the detection of 42 fatigue cracks not previously found by conventional inspection methods,” Dr. Harris says, allowing Discovery to be certified as flight worthy after removing the cracks and to continue in service without any mission delays.

Dr. Harris received the 2006 NASA Exceptional Service Medal in recognition of his extraordinary work as a principal engineer in the NESC. Next, he earned the 2007 NASA Exceptional Engineering Achievement Medal for exemplary engineering and technical leadership. But he still admits, “Human exploration of space is really hard. We are still just barely able to put people into space. There are challenges with every mission.”

Dr. Harris also earned the Presidential Rank of Meritorious Executive in 2005 and Distinguished Executive in 2008 in the Senior Executive Service for “sustained superior accomplishments in the management of programs of the United States government and for noteworthy achievement of quality and efficiency in public service.”

Due to Dr. Harris’ technical expertise in structural integrity of materials, he has also supported other federal agencies during his career. Among his appointments, he served on the National Research Council’s (NRC) National Materials Advisory Board’s (NMAB) Committee on the Aging of U.S. Air Force Aircraft. He also served on the U.S. Air Force’s Blue Ribbon Panel that evaluated the sustainment plan to extend the life of the C/KC-135 fleet to the year 2040. And he served on the NRC’s NMAB panel for new materials for the next generation commercial aircraft to support the FAA’s strategic planning to prepare for future aircraft entering the worldwide fleet.

Although retirement eligible, Dr. Harris plans to continue working indefinitely. As if he isn’t busy enough, he is adding to his plate by writing a book about the evolution of science, technology, and religion that he hopes to eventually publish. He is active in the Society of Experimental Mechanics (SEM), including a stint as president of the organization. He also served as the technical editor of SEM’s research journal, the international journal of Experimental Mechanics. He is also an associate fellow in the American Institute of Aeronautics and Astronautics (AIAA) and served two terms on the NRC’s U. S. National Committee on Theoretical and Applied Mechanics as the AIAA liaison.

He and his wife have three children: Scott, Jennifer and Steven. They have one granddaughter, Caroline.
Bennett K. Hatfield  
Mining Engineering, Class of 1979, BS

“Successful companies are built on the strength of their people, not their assets,” said Ben Hatfield in reference to lessons he learned from two mentors -- the late James H. “Buck” Harless, a visionary pioneer of the timber and coal industries in southern West Virginia; and E. Morgan Massey, founding member and chief executive officer (CEO) of the Richmond-based A.T. Massey Coal Company.

Hatfield is recognized with growing International Coal Group from a “small shell of bankrupt companies into a $3.4 billion corporation” and “successfully reorganizing Patriot Coal Corporation out of Chapter 11, saving over 4,000 jobs, and preserving medical care for thousands of retirees,” said Greg Adel, Professor and Department Head of Mining and Minerals Engineering at Virginia Tech and Mike Karmis, the Stonie Barker Professor and Director of Virginia Center for Coal and Energy Research, in their nomination of Hatfield.

“I’ve done okay in the coal business, but my real claim to fame is that I was a caddy for Buck Harless,” reflected Hatfield humbly on his formative experiences of the early 1970s. Growing up as a coal miner’s kid, Hatfield had to earn his own spending money by delivering newspapers and caddying at Tug Valley Country Club. It was on the golf course that he met Harless and other successful business leaders in the region.

“Buck was really good to me. He shared real life advice and demonstrated how business people positively impact their community,” Hatfield explained.

A third generation coal miner and the youngest of six children, Hatfield was raised in the coal-mining town of Sprigg, West Virginia, located on the Kentucky border in Mingo County. During the week his father supported the family by working in the mines of Island Creek Coal Company. But, on weekends he served the community as a minister at Freewill Baptist church and the Hatfield children could be found wearing their “Sunday-best” on the family pew at church.

Hatfield’s parents stressed the importance of hard work and getting an education, but money was very tight. The only way the Hatfield kids could afford college was to work part time jobs and pursue scholarships or loans.

Post high school Hatfield went the affordable route and signed up for classes at the University of Kentucky’s Prestonburg Community College. He and his twin brother Dennis had the good fortune of meeting local coal mine managers at the church their father pastored. Their connections with managers at A.T. Massey Coal Company in Kentucky helped them obtain part time coal mining jobs to pay for college.

As Hatfield demonstrated proficiency in his coursework at community college, he also experienced a growing interest in the field of mining engineering. He set the lofty goal of attending Virginia Tech, but realized financial help would be necessary to cover out-of-state tuition, room, and board. Hatfield’s manager put in a call to O. B. Bucklen, vice president of engineering for A. T. Massey, who had been charged by E. Morgan Massey with identifying up-and-coming students for the Massey management intern program.

Bucklen connected him to Dick Lucas, then the department head of mining engineering at Virginia Tech. Lucas expedited applications for Hatfield and his brother Dennis to receive Massey scholarships and welcomed them into the mining engineering program. As a Massey scholar, Hatfield enjoyed the dual benefits of paid tuition and secure employment during summers and holiday breaks.

When it came to college life, Hatfield acknowledged he was pretty intense. “I approached school like it was a full time job because my financial security depended on it,” said Hatfield of his mature beyond his young years college existence. “As soon as each quarter ended, I headed home to work in Massey mines to earn enough money to get me through the next quarter.”

In May 1979, despite multiple job offers, Hatfield cast his lot with A.T. Massey Coal, accepting a job as project engineer at its Kentucky Wolf Creek Collieries operation.

“It seemed a natural progression to accept Massey’s offer,” said the loyal Hatfield. “They had helped fund my education, the offer was very attractive, and I wanted to work in the area where I grew up. A major factor in my decision was Morgan Massey’s management philosophy. He believed in empowering managers and training them to manage in a decentralized fashion. He believed companies couldn’t grow successfully unless they built a bench of strong leaders that understand the company’s culture, adhere to its guiding principles, recruit new talent, and advance young managers through the ranks.”

Over the next 23 years, Hatfield served in various engineering, operations, and corporate management capacities in Kentucky, Colorado, West Virginia, and Virginia. In June 1998, he was promoted to executive vice president and COO for (now publicly-traded) Massey Energy Company.

In December of 2001, Hatfield resigned from Massey Energy and accepted the executive vice president position at El Paso Corporation’s Coastal Coal subsidiary. His key assignment was to help strengthen operating performance and prepare the coal holdings for an organized sale process. He successfully completed the task in 14 months. Hatfield then accepted a position with Arch Coal in March 2003 as its president of eastern operations. At Arch, he was responsible for nearly 30 million annual tons of coal production located in mine complexes extending across Kentucky, Virginia, and West Virginia.

In early 2005, veteran Wall Street investor Wilbur Ross Jr. approached Hatfield with a challenging assignment. Ross has just begun assembling a new coal mining company from the remains of two companies that had recently emerged from bankruptcy. He wanted Hatfield to
become president and CEO of International Coal Group. The plan seemed simple enough; hire a management team, invest prudent capital to upgrade bankruptcy-neglected equipment, launch green-field mine developments to replace mines nearing depletion, establish stable financial performance, and take the company public with an initial public offering. As it turned out, sharp deterioration in coal markets, a major mine accident, and a host of other issues made the challenge much tougher than expected.

During his tenure at ICG, Hatfield earned great respect for Ross. “He had incredible patience – plus a remarkable ability to sift through complex problems and find a common sense answer,” said Hatfield. In June 2011, under Hatfield’s leadership, the collection of once insolvent companies was sold to Arch Coal for $3.4 billion.

With work completed at International, Hatfield briefly considered retirement, but quickly concluded he enjoyed mining business and was not ready. In September 2011, he joined Patriot Coal Corporation as executive vice president and COO when the coal industry was entering the most dramatic down-cycle in three decades. Within nine months after joining Patriot, Hatfield was faced with the unenviable task of taking the company through Chapter 11 reorganization. He was promoted to president and CEO in October 2012. Over the balance of 2012 and 2013, Hatfield strategically reorganized the company, shutting in high cost production, rejecting value-damaging contracts, negotiating a new five-year concessionary wage agreement with the United Mine Workers of America, and eliminating $1.7 billion in liabilities. As a result, 4,000 hard-working employees kept their jobs and medical insurance for 10,000 retirees was preserved.

“It was tough. We had to make quick decisions because the company was burning through borrowed cash at an unsustainable rate. Aside from the normal costs of running the business, Patriot was spending nearly $7 million a month on bankruptcy-related fees for lawyers, committees, and consultants. But in the end, the company was successfully reorganized because we were blessed with good assets, great people, patient vendors, and loyal customers,” said Hatfield with great pride.

Under Hatfield’s current leadership, Patriot is one of the largest holders of Eastern U.S. coal reserves, operates 11 state-of-the-art mine complexes in three U.S. coal basins, and benefits from broad transportation optionality.

Hatfield serves on the board of directors for both West Virginia Coal Association and the National Mining Association, an advisory board member of the Virginia Center for Coal and Energy Research; and a member of the Central Appalachian Section of the Society of Mining Engineers, The Old Timers Club, Careers In Coal, and the King Coal Club.

Outside of his busy travel schedule, Hatfield remains involved in the Virginia Tech mining community, attending the annual department awards banquet to present the outstanding senior with the Old Timers Club Award. He continues to support funding for student scholarships and department operations.

In his downtime, Hatfield visits his two daughters. The eldest, Ashley Kay, has completed undergraduate degrees at West Virginia University and Virginia Commonwealth University, recently married, and resides in Richmond, Virginia. The youngest, Lauren Nicole, received her undergraduate degree from Washington & Lee University in 2014 and is now enrolled in the master’s program at George Mason University studying archeology and has an internship at The Smithsonian.

Hatfield’s two older brothers remain fixtures in the coal industry as well. Dennis and Steve currently work for competitors, Rhino Energy and Arch Coal, Inc., “making for interesting Sunday dinners.”

“It would be great if I could cite some remarkable secret to my success but, as best I can tell, the key is to surround yourself with smart people and heed their advice when it’s offered,” said the Academy of Engineering Excellence inductee.
Paul F. Holloway
B.S., Aerospace Engineering, 1960

His grandfather and father were both expert fishermen but Paul Holloway turned his eyes upward to space instead of toward the water. As early as grade school, his teachers and fellow classmates marveled at his mind and knew he was destined to become a scientist of some sort. Mr. Holloway only went on one job interview at the start of his career and jumped at the chance to work at NASA Langley Research Center as an aerospace research engineer during an important time for the space industry in the U.S. His career soared and when he retired from the center in January of 1997, he had held the position of director for the past five years. Today, Mr. Holloway remains an internationally recognized authority in hypersonic aerodynamics, boundary-layer transition and flow separation, analysis of entry flight mechanics, advanced launch vehicles, and earth orbital and planetary space missions.

A native of the small Virginia town of Poquoson, the NASA executive elected to stay there his entire career, despite attempts to move him to the hustle and bustle of nearby Washington, D.C. However, he did enjoy three temporary assignments at the NASA headquarters in the nation’s capital. He married his Poquoson High School sweetheart, Barbara. Their son, Eric, also lives in Poquoson. Unlike his father, but not unlike his grandfather and great-grandfather, Paul’s son returned to his earlier roots for his career as an independent waterman.

Mr. Holloway graduated with honors from Virginia Tech with a B.S. in aeronautical engineering in 1960. He also completed two years of graduate study work in physics at the College of William and Mary. Attending the Advanced Management Program at Harvard Business School in Boston gave him the chance to rub elbows with other senior executives from 31 countries around the world. The practice-oriented program was designed to prepare senior corporate leaders to deal with issues and problems facing top-level management during the 1990s. In 1994, Old Dominion University awarded Mr. Holloway an Honorary Doctorate of Science degree.

When Mr. Holloway served as NASA Langley’s Director, he managed NASA’s aeronautical and space research activities as well as 2,800 civil service employees and 2,200 contract personnel. Prior to this appointment, he served for seven years as NASA Langley’s Deputy Director, responsible for overseeing its science, research, and technology space programs. And, from 1975 until 1985, he was the Director for Space, responsible for advanced space transportation, planetary entry, space station and Langley’s premier atmospheric sciences program. Throughout his career, he has stressed interdisciplinary approaches to solving critical technical problems that often became vital in resolving U.S. Congressional concerns about the space program.

For his efforts, he received numerous awards. In 1980, he received the Outstanding Leadership Medal followed by the Presidential Rank of Meritorious Service in 1981 for his sustained accomplishments in federal service. The aerospace engineer received the Presidential Rank of Distinguished Service in both 1987 and 1993. President Ronald Reagan conferred the 1987 award on the NASA star during special ceremonies, citing Mr. Holloway’s “sustained extraordinary accomplishment in management of programs of the U.S. government and for leadership exemplifying the highest standards of service to the public, reflecting credit on the career civil service.” He was a recipient of NASA’s Exceptional Service Medal and Equal Opportunity Medal in 1981 and in 1992. In 1992, he also earned the Distinguished Service Medal. He is a charter member of the Space Shuttle Task Group and the Space Station Technology Steering Committee.

His outstanding credentials earned him a special appointment by President Reagan in 1985. The President named Mr. Holloway the Co-Director of the NASA/DOD National Space Transportation Architecture Study Team. The Peninsula Engineers’ Council awarded Mr. Holloway Engineer of the Year in 1997. He is a Fellow of both the American Institute of Aeronautics and Astronautics and the American Astronautical Society. As an active member of these organizations, Mr. Holloway has served on a multitude of boards and committees since 1955. He is also a member of the International Academy of Astronautics.

Since retiring, Mr. Holloway has consulted with the aerospace industry and NASA and has served for four years on the College Board of Thomas Nelson Community College.
Paul Huffman, Jr.
Materials Science and Engineering, Class of 1978, BS

By age 14 Paul Huffman, Jr. wanted to earn a paycheck and his father's business, the Virginia Foundry Company, provided him the perfect venue. This experience not only chartered his career, but provided him the opportunity to work with his father who Huffman described as his mentor, best friend, and coach.

“The first time I saw molten metal I was hooked. It was a raw, basic, smokestack industry that is a much cleaner process today,” acknowledged Huffman, who played a hand over the last several decades in making this a cleaner process.

The Northside High School graduate would spend five years studying metallurgical engineering at Virginia Tech. The fifth year was necessary because he took the initiative to create his own co-operative education position at the Lynchburg Foundry in the 1970s. Prior to Huffman’s tenure at the foundry, it had not participated in Virginia Tech’s co-op program.

The position proved successful for both Huffman and the Lynchburg Foundry. He worked with the company’s engineers to design a quality and process control system for a new startup operation, and the relationship paved the way for future co-ops to train at the facility until it closed in 2009. The on-the-job experience also helped him acquire a dozen job offers when he received his diploma in 1978. "It was a great time to graduate. Everyone in my class had multiple offers," he added.

Upon graduation, Huffman accepted employment at Pangborn Corporation of Hagerstown, Maryland, as a foundry metallurgical engineer. This large manufacturer of industrial shot blast and descaling equipment had just obtained $6 million to modernize its foundry operations. The small company would be placing a lot of faith in the abilities of this brand new graduate.

His experience at Pangborn propelled him into a management position after five years. He joined the Graham-White Foundry, a decision that brought him back home to southwest Virginia. During his nine years with this manufacturer of equipment for the transportation industry, Huffman was part of the team that installed new processes, modernized its foundry and increased the commercial business. "We grew from one and a half shifts, five days a week to three shifts, six days a week. When I joined, 80 percent of our production was captive to our railroad product line with 20 percent going to commercial customers. Nine years later, after a successful focus on growing the commercial side the foundry, this production mix completely shifted to 20/80."

Graham-White was a stepping-stone for Huffman, but one that had long-range benefits for both. "I knew I eventually wanted to run a large foundry operation or engage on the sales side. I had prepared for this goal by enrolling in business classes for all of my electives at Virginia Tech and taking graduate MBA courses during my work career," Huffman explained.

“My vision was to start a company that was a supplier of metal castings but not a manufacturer. Twenty-two years ago the concept of outsourced manufacturing was in its infancy, and I agreed this was the only way to be competitive. As a business model, I knew it would work. I had faith, but it was semi-blind faith," he acknowledged. So he met with his managers at Graham-White and explained his vision to branch out on his own. His relationship with Graham-White flourished as it agreed to become one of his manufacturers.

Huffman’s basement was the first corporate headquarters for his start-up, Dominion Metallurgical (DOMET), opening in 1992. After three months, he hired his first employee, but they were still working from his residence. By the time he reached four employees, and meetings had to be moved upstairs to his dining room, he realized the company needed to relocate.

Today the business has grown to 20 employees and is housed in Roanoke’s Valleypark Industrial Park. “It has been a wonderful journey,” Huffman said.

“Our unique business model has attracted experienced technical foundry and manufacturing individuals to join us. Instead of capital equipment our company’s resources are focused on systems and people, allowing us to become intensely customer service based, setting us apart from our competitors. We engage with our customer’s purchasing, engineering, quality and manufacturing sectors in order to provide comprehensive solutions to their requirements.

“We have attracted exceptional technical metal manufacturing personnel to become the supplier as opposed to the manufacturer,” Huffman elucidated. These professionals “have extensive experience in manufacturing,” and they use their expertise to supply cost effective, high quality metal and plastic components for industrial and consumer applications.

Domet matches the customer to the manufacturing process to supply tooling, prototypes, castings, forgings, machining, plastics, fabrications, turnkey components as well as many value added operations. Corporations such as GE, ABB, Manitowoc, Kollmorgen, Daiken, United Technologies, Sikorsky, and Dominion Resources rely on Domet’s expertise.

As a result of this model several sister companies have been formed. One such company, Safety Step LLC, used the Domet model to design and manufacture a niche line of step stools for several specialty market channels. Their products have grown to become the leading step stool solutions for the recreational vehicle and transportation industries.

The business Huffman started 22 years ago is now coming full cycle, as the off shoring of the manufacturing part of the foundry industry is now returning to the U.S.
This change in production is one of the reasons Huffman involved himself with his department, now called Materials Science and Engineering at Virginia Tech.

“For several decades there had been little university production of materials science students to enter into the foundry business in the middle-Atlantic region. An educational void existed. Foundries in this area were forced to go outside this area to find young engineering talent,” Huffman, an adjunct professor for the materials science and engineering department, explained.

So some 10 years ago he started spending more time with David Clark, materials science and engineering department head. He joined the advisory board, and started fund raising for Virginia Tech’s own teaching and research foundry. “As a board member I spoke about the need for an interdisciplinary teaching and research laboratory,” Huffman recalled. “So when John Kroehling (a fellow alumnus and advisory board member) created his legacy, he funded the Virginia Tech Foundry Institute for Research and Education or VT FIRE.

The new world-class teaching and research facility, emphasizing green engineering and industry’s best practices, had its first molten-metal pour in the fall of 2010. “The new young talent that is being trained here will keep our industry strong,” said the Hokie who co-chairs the VT FIRE steering committee.

Another area where Huffman made a significant contribution to his alma mater was through the Corps of Cadets. Although he was never a member, Huffman and his father’s association with the Corps is forever etched into the history books at the University. When three cadets, including Homer Hickam, the author of The Rocket Boys that was later produced into the movie October Skies, decided in 1962 that the school needed a cannon to compete at the football games with VMI’s version called Little John, they turned to the Virginia Foundry. Huffman Sr., a former Greenbrier cadet, agreed to provide the casting at no cost. The students named the cannon Skipper in honor of President John F. Kennedy who was assassinated the same day in 1963 that the artillery gun was transported from the Roanoke Foundry to Blacksburg.

Some 20 years later when the Corps needed to replace the original Skipper, they again were saved by a Huffman – Junior this time. When he read about their plight, he called and said he would create the next generation Skipper, and most importantly, at no cost. He was just honored to be following in his father’s footsteps. Skipper II has just finished its 30th year of service, debuting at Lane Stadium in October of 1984.

For his profession, Huffman serves as the education chair and as a director for the American Foundry Society, and he is a past trustee for the Foundry Education Committee. He is a member of the American Society for Metals, and when he was a student at Virginia Tech, served as president of its student chapter, the only materials related student chapter at the time.

Huffman, his wife, and three sons, continue to live in Roanoke, Virginia.
W. Robert Jebson, Jr.
Metallurgical Engineering, 1956

Bob and Chris Jebson were recently described in their community newspaper as a couple who by “mostly working behind the scenes, have helped make Culpeper, Va., a better place to live. From the library to the hospital to the business world, the Culpeper couple doesn’t hold back when it comes to community building.” In recognition of their service to the community, they were elected as the Grand Marshals of the Fourth of July parade in 2003.

Bob, a Virginia Tech graduate with a B.S. in metallurgical engineering, began his career in the U.S. Army Corps of Engineers and moved to Newport News Shipbuilding and Dry Dock Company. After that, he spent 16 years employed with Westinghouse Electric Corporation. With Westinghouse, he held various engineering and managerial assignments which led to the company’s entry into the manufacturing of water quality equipment in Culpeper. Bob was responsible for bringing the Infilco Division of Westinghouse to Culpeper and served as the plant manager.

After relocating to Culpeper, Bob saw the need for a professional service company with the ability to operate and maintain water and wastewater systems. In 1973, Bob’s vision developed into Environmental Systems Service (ESS), Ltd., a professional service company with a supporting environmental laboratory. “Business success is a matter of finding the niche that makes a company flourish,” Bob recalls.

This philosophy proved true again as regulation and controls began increasing in the agricultural industry. Since farmers could no longer examine their milk in-house for all of the many possible contaminants, they were looking for a way to test their products with more sophisticated instruments, and have the ability of convincing their customers that the results had more validity since they were produced by a third party laboratory. Bob, as ESS President, realized the need, and the company began to expand into the testing of dairy products. Bob states, “The dairy industry is one of the most regulated; every ounce of milk produced is tested before it enters the food supply.” When a customer enters almost any Safeway, Giant, or 7-Eleven store in Maryland, Virginia, or Pennsylvania, chances are that ESS performed some of the testing that ensures the quality of the products.

From its origins with water and wastewater to dairy testing, ESS expanded into food analysis. “There is not a weak sister in the foursome. We were very selective and did not take a lot of chances. Our goal has always been to provide gainful employment and to control our own destiny,” Bob says. His philosophy paid off, and for more than 30 years, the company has remained privately owned, and has continued sales growth. A facility in Bedford, Va., was added in 1978, followed by another in Maryland in 1979, and in 1992 a fourth laboratory was opened in Winston-Salem. Country Water Systems, another division of ESS, was established in 1987. Its client association includes Fortune 500 companies, as well as the small independent producers and all business levels in between.

“We have grown the company very conservatively,” says Bob. “We have a lot of dedicated employees, and one of our goals was to provide gainful employment. I can count on one hand the number we have had to lay off in all those years. I was a one person operation in 1973, and today we employ 70 people.” Don Hearn, the second employee, is still a significant part of the business and manages the company’s Environmental Services Division. Even though Bob is semi-retired today, his son, Craig, and daughter, Karen, remain with the business, playing significant roles in the management of the company.

Over the past three decades, living in a town of about 10,000 people, Bob has assumed more than his share of civic responsibilities. “I came to Culpeper as a major employer (with Westinghouse), and that brought a lot of leverage,” Bob recalls. It wasn’t long before he became Rotary Club President, and served on several community bank boards. He worked diligently with economic development personnel to bring in more industry and expand the tax base. Bob chaired the hospital board on more than one occasion, and was instrumental in fostering a relationship between Culpeper Regional Hospital and the University of Virginia Health Services Center for certain aspects of quality care. He has also devoted time to the Culpeper County Chamber of Commerce and the Culpeper Presbyterian Church. In 1995, Bob was awarded the distinguished L.B. Henretty Award for outstanding community service.

Bob’s wife, Chris, shares his enthusiasm for their community. She has also volunteered her time and efforts to a variety of community-oriented projects, one of which has been helping others with an outstanding library. This effort eventually led to the construction of a new, larger facility five years ago. She was also a leading force in developing the annual “Lights of Love” fundraiser at Culpeper Regional Hospital. Bob and Chris are also supporters of the Virginia Tech College of Engineering, joining its Committee of 100 within a few years of its inception. Bob states, “I met Paul Torgersen, who was Dean of Engineering at the time, and after a few hours with him, I had a new appreciation and a new pride in what the University had done for me. I’m sure Paul has done that for a lot of graduates. He’s so easy to follow.”

Bob’s interest in engineering was almost genetic. Both his father and grandfather were employees of the Newport News Shipbuilding and Drydock Company, and both became interested in the engineering professions as children. “I spent a lot of time at the machine shop and I had a distant relative who thought I would be good in chemical engineering. But when I started turning valves and handling fluids at Virginia Tech, I decided that was not for me. I transferred to metallurgical engineering, and, following the family tradition, worked at the shipyard during the summers and for my first year after graduating from Tech.”

One of Bob’s favorite past times was playing tenor saxophone with the “Highty Tightsy,” the marching band of the Corps of Cadets. He became Captain of the band during his senior year and developed a close relationship with his classmate and Corps Commander, Preston Wade, who is now the retired CEO of Wiley and Wilson of Lynchburg, Va. Upon graduation, Bob spent six months on active duty with the military and then six and a half years in the reserves. He also spent time with the Corps of Engineers, with his main responsibility to train new young officers.

Bob and Chris celebrate 50 years of marriage in 2005. The two met when they were teenagers living in Hampton, Va. After he left for Virginia Tech in 1951, Chris would often visit Bob in Blacksburg. She remains a steadfast “Hokie” with her husband — tailgating at the home football games next to Cassel Coliseum. Bob’s enthusiasm for Tech as an academic institution is displayed in his support for engineering activities as well as the pride in his grandkids’ recent achievements: Grandson, Roque, graduated in 1997; and granddaughter, Nicole, is a junior studying business. Two other grandchildren, Tiffany and Jeb, are possible Virginia Tech candidates in 2008 and 2013.

After working for close to 50 years, Bob admits to spending a lot more time on the Rappahannock River these days. He likes the idea of returning to tidewater and enjoying the many benefits of water activities; his only thought is that he doesn’t move as well as he did as a kid.
“I once promised I would never be in business for myself. I grew up in the retail business world, and I saw how tough it was to be a small business person,” says Marvin Johnson. “Well, I have had to eat those words.”

Today, Mr. Johnson is the president and owner of Associated Power of Wilmington, California, a provider of rental-duty portable generator sets, light towers, air compressors, and related equipment and accessories. The company has additional locations in Bakersfield, Fontana, and San Diego, all in California.

He credits much of his successful career with his constant desire to remain abreast of the latest innovations in technology. A 1964 electrical engineering graduate of Virginia Tech, Mr. Johnson has never shied away from learning about technology as it has evolved over the decades since his graduation, now closing in on 50 years. In fact, he enjoys learning “about the nifty stuff” that allowed him early on to develop on-line inventories, have computers speak to one another from remote locations, and other advances that seem commonplace today.

Mr. Johnson grew up in Bedford, Virginia, where his father owned a retail furniture business called Earl’s Furniture. As a young boy, he spent his afternoons after school at the downtown location, earning his spending money.

“With 30,000 square feet of furniture, I had a lot of dusting to do. Dad even wanted the rails below chairs dusted. I also had to set up displays and move them around and dust them again,” Mr. Johnson laughs. It was then, as a teenager, that he made the promise to himself that he would not spend his professional career as owner of a small business. Teenagers have been known to back pedal.

His engineering interests may have started when he was about seven or eight, and his father installed one of the first television sets in town in the late 1940s. The closest station was in Greensboro, North Carolina, and the picture was a bit “snowy” but the technology bug hit him.

He moved on to amateur radio in the 1950s, mainly due to the influence of his cousin, Tom Musgrove, and good friend Don Graham, who both went on to become Hokies. During his senior year of high school, “Don encouraged me, and we took three trips to Norfolk for FCC Commercial License exams, leaving each time in the early morning to be there to take the tests, and returning in the evening,” Mr. Johnson recalls. They both got their commercial radio license, and had enough knowledge as teenagers to operate any transmitter in the world. The irony was that their high school instructor accompanied them, but did not initially pass the test.

Musgrove, Graham, and Johnson were all accepted into Virginia Tech’s College of Engineering, although Mr.
Johnson admits he applied late to the Blacksburg school, and only on the advice of his high school principal. But he was admitted, and started by living off-campus for the first year as a member of the Corps of Cadets.

He chose electrical engineering because of his radio background, and volunteered to work at the University’s student radio station, WUVT. He even landed a disc jockey’s job, although he says his stint was “when no one was up” from 6 a.m. until 7:30 a.m. He played the popular music of the time, bands he recalls as being the Kingston Trio and the Lettermen.

Just before he graduated, he met his future wife, Sue, a freshman at Radford University. When he took his first job at Delco Products with General Motors in Dayton, Ohio, Sue transferred to and graduated from Miami University of Ohio. They were married in 1966.

His move to Dayton was once again precipitated by his relationship with Graham who had worked one summer at the GM facility. When GM had come to campus to interview, Mr. Johnson vividly recalls he had four exams on that day, and was unable to meet with the company representatives. His mentor Graham encouraged him to write a letter to GM, explaining his interests and why he had been unable to meet them. The next thing Mr. Johnson knew, GM was flying him to Dayton and making him a spectacular offer.

Mr. Johnson entered GM’s training program, and moved around a fair amount, learning about automotive components, electric motors, and power generators. He eventually landed in the power generator side, and was offered a permanent position in its sales. He traveled the southeastern part of the country, then the northeast, calling on engine houses. He stayed nine years with GM, during which he was transferred to the Los Angeles office.

In 1973 he “felt the need to go out on my own” and joined a small business called Lawless Detroit Diesel in the Los Angeles area. He started as a sales manager, but quickly moved up to vice president of sales and manufacturing. The owners appreciated his technical experience, and asked him to get the delivery of their products back on track, a feat he quickly accomplished. “One project was a 4500 horsepower gas turbine engine powered generator set, a big beast,” Mr. Johnson says. His management of the process soon showed the company’s owners that they could make money on engine sales, not just from the repair end of the business.

Six years later, Mr. Johnson joined Associated Diesel as a partner (later renamed Associated Power, Inc.), originally founded as a small diesel engine service company in Long Beach, Calif. In 1959 the company moved to Wilmington, Calif., and added industrial, off-highway, and oil field engine markets in addition to its initial focus on the commercial marine industry. By the time Mr. Johnson joined, Associated Diesel had already partnered with his old company, GM, and was made a factory authorized dealer for the Detroit Diesel and Allison Transmission Division of GM.

When Mr. Johnson agreed to accept the sales manager position for Associated Diesel, he told them he had four goals: to computerize the company, develop a new product line, achieve an expansion, and move into the rental business. To achieve his first goal, Mr. Johnson enrolled in computer courses with IBM, learning how to process communication between computers. “For me, this was nifty stuff for that time. I took IBM’s report generating program class. Being able to hook up to a factory, and see all of the inventory on-line” and then multiply that by the five locations was progressive for 1982, Mr. Johnson explains. “I was scrambling to learn everything.”

And with the vast improvements being made in the manufacturing of engines, his decision to lose the emphasis on engine rebuilding and repair, and move to the rental business, was also prophetic.

As his successes mounted, Mr. Johnson, as one of three partners, bought out the fourth in 1984. Ten years later, Mr. Johnson and the second partner bought out the third. In 1995 he was named president, and he bought out the last partner in 1999.

Mr. Johnson’s early decisions in how to move the company proved fortuitous, and he is credited by the publication Construction Equipment Distribution with the “ability to adapt to changing business conditions enabling Associated Power to thrive for more than 40 years.” Mr. Johnson, a man who wears many hats, adds, “Technology is the key to survival in business.” His “survival” comes with multimillion dollar annual revenue.

The successful businessman now maintains a large fleet of rental equipment, with sales around the entire United States, Canada, Mexico, and overseas. Unlike most rental companies, they routinely sell their used equipment, which allows them to keep their rental equipment current. When there are natural disasters causing massive power outages, such as Hurricanes Katrina or Irene, his business lines in California light up.

Currently working with a Canadian data company, Mr. Johnson is directing Associated Power’s efforts in the custom design and use of Global Positioning System receivers installed on his portable power generators and air compressors. This allows him to monitor their position and alert him to pending problems. Data from his GPS receivers is sent to Canada, relayed back to California, and combined with his custom software to assist customers with the use of their rental power equipment.

In the 1990s, Mr. Johnson became reacquainted with his alma mater, serving on the electrical and computer engineering advisory board from 1995 until 1998, and then on the college’s advisory board from 2006 until 2010. Together, the Johnsons have established two endowments in the college, and they are strong supporters of the Ware Lab where undergraduate design teams are able to work 24 hours a day, seven days a week on projects.

The Johnsons have one daughter, Christine, a graduate of William and Mary and Stanford, who works in New York City and is married to journalist Bryan Curtis.
Dr. J.B. Jones  
Mechanical Engineering  
Class of 1945, BS

To many of his students during his academic career, he was known as “SP minus 1.” To his musical friends he is touted for playing a mean sounding woodwind instrument. At Virginia Tech, if you mention the name J.B. Jones, a legacy in the mechanical engineering (ME) department comes to mind.

Jones was the department head of ME from 1964 until 1983. He was a graduate of the Class of 1945, but actually received his ME diploma in 1944, as many of his peers did, pushing through school during the World War II era. His leadership of one of the original departments of Virginia Tech’s College of Engineering came right after his uncle James Bernard Jones had served in this role for three decades. His father Alonzo L. Jones received his bachelor’s degree in ME in 1918, and his cousin, Mary Virginia “Prim” Jones, daughter of James Bernard Jones, was the third female graduate of ME, receiving her diploma from Virginia Tech in 1961, going on to record a host of firsts for women in engineering. This heritage makes the name Jones iconic in ME, and today alumni are establishing the J.B. Jones Legacy Endowment, specifically for his multiple contributions over decades of work.

While an administrator, J.B. Jones never failed to be in the classroom, choosing to teach the 8 a.m. classes when he found students to be alert and the classrooms were the cleanest. Afterwards, he could proceed with his administrative duties throughout the day. These students were the ones who nicknamed him “SP minus 1,” accounting for how he graded otherwise perfect technical papers, taking one point off each time there was a misspelled word.

Jones was born to be a VPI man. He never suffered from the dilemma of what field to study, as he grew up in West Orange, N.J., spending many a night and weekends with his workaholic Hokie father. They would visit power plants where his father tended to concerns about the facilities. Or they might travel to his dad’s family in Virginia, where most of the men worked with the railroad. As an impressionable youngster, one of his most fun recollections was a visit to a brewery where each employee had a cup and received free tastings, possibly accounting for Jones’ eventual 25-year membership in the Blacksburg German Band.

So when the time came to receive his formal education in engineering, VPI was his solid choice, even though he received a full scholarship to another university. “It was a lot cheaper to come to VPI with its cost of living,” Jones recalled, a truism still heard more than seven decades later, from many of the out-of-state applicants to the Land Grant University.

As a student at Virginia Tech in the early 1940s, Jones depicted the ideals of a Renaissance man. His first day on campus, he was unloading his two saxophones and a clarinet when he was spotted by a fellow musician who approached him in a panic-stricken demeanor. The reason was that the classic Virginia Tech dance band, the Southern Colonels, had a job in just a few days at the nearby Mountain Lake Resort, but they needed a saxophone player. The conversation about J.B.’s abilities led the upperclassman to scramble to find him a uniform, and he played the job with the band. Jones was already making a name for himself within days of his arrival. Afterwards, he decided as an engineering student he could not afford the time it would take to remain a Southern Colonet, but he would play with the regimental band, the Highty Tighties for the next three years.

As a freshman he sought ways to use his penchant for writing, joining the yearbook and student newspaper staffs. At The Virginia Tech, the precursor to today’s Collegiate Times, he learned copy editing skills and his way around a newsroom. “Usually the editor and the top editors on the paper could talk to the administration,” Jones recalled, and when he became the editor-in-chief, he was able to speak with then President Julian Burruss about issues on a weekly basis.

One particular newspaper incident still stays very fresh in Jones’ 90-year old crystal clear mind: when the Commandant of the Corps of Cadets learned that the Class of 1943 was going to be assigned active duty immediately, the newspaper editors were able to talk the head of the military into allowing The Virginia Tech to announce the decision in a banner headline the following morning. Jones remembered proudly that everyone on campus that morning was saying, “Have you seen The Virginia Tech?”

Beyond his communication and musical skills, Jones also served as the Virginia Tech Honor Court Judge, and was a member of several honor and social affiliations including the German Club, Tau Beta Pi, Pi Tau Sigma, and Phi Kappa Phi, the most selective honor society serving all academic disciplines.

When he graduated, his first stop was the U.S. Department of War where he remained until the World War II armistice was signed. While he was there, he discovered there was a problem he couldn’t determine a solution for, and decided he had “better go back to school.” So, in 1945, he started his master’s degree at Purdue University, and by 1951 he had his doctorate. Throughout that time he was also able to teach on the Purdue faculty. When he received his doctorate, he obtained a leave of absence from Purdue to work with General Electric Company, followed by shorter periods with General Motors and Babcock & Wilcox Company. After returning to Purdue, he was promoted to full professor in 1957.
Jones and his wife Jane, whom he met while they were both engineering students at Virginia Tech, were content with their lives in the Hoosier State, but Virginia Tech came knocking on their door, asking if Jones might be interested in the ME department headship. For multiple reasons, his answer was “no” but a message was relayed back to him, saying that Virginia Tech’s President T. Marshal Hahn wanted him to come visit for a few days.

Thinking he could not turn down such a request from the University’s president, Jones hopped on a plane, and during his visit spent about five hours with the physicist turned administrator. “He met with me one on one, and impressed me with his clear distinctions among what he had already accomplished, what he was working on to achieve soon, and what he hoped to do in the long-term,” Jones said. Hahn’s forthrightness and accessibility changed his mind, and he was soon leaving Purdue for the Blacksburg campus.

Arriving in 1964, Jones started making some enhancements to the already valued ME diploma. He met with companies to provide fellowships for the students working on their graduate degrees. Jones’ plan was to streamline the process as the norm at that time was to have grad students spend four to five years obtaining a master’s while they worked for the department as instructors. He also organized ME’s efforts with the International Association for the Exchange of Students for Technical Experience (IAESTE), and one year had 11 undergraduates working in Europe through the program. Under Jones’ leadership, the ME department won a national award from IAESTE for its participation.

In 1985 PC Week wrote, “The hills of Virginia are the last place you would expect to find an oasis of high technology. Yet technology is here, perhaps in greater abundance than any other school in the country.” The magazine was referring to Virginia Tech’s strong commitment to technology, including the successful $2 million grant obtained by Jones, working with Arvid Myklebust and others, to develop a computer-aided-design, computer-aided manufacturing laboratory. At the time, they received an unheard of $2 million grant from IBM to facilitate the construction of the lab that has since been modernized and remains in use.

Jones also worked to change some of the mundane but serious obstacles to improving the department’s quality such as arcane state purchasing and personnel rules. “The challenges changed during the years, but it was always fun,” Jones said.

He stepped down as department head in 1983 but still held his Lingan S. Randolph Professorship, presented in recognition of his effective teaching, and sustained and distinguished scholarship. In 1988 he formally retired but laughingly said he “never could get people to realize I had.” Maybe the reason was because he chose this time to write a third book, Engineering Thermodynamics, co-authored by Regina E. Dugan, another noted ME graduate and the first woman to head the Defense Advanced Research Projects Agency (DARPA). He also spent two years co-chairing a National Research Council subcommittee on engineering design.

Jones led several fund-raising activities for the College of Engineering, the Alumni Association, and the Corps of Cadets. In 1991 the American Society of Mechanical Engineers awarded him the James Harry Potter Gold Medal for his contributions in thermodynamics. In 2008, Virginia Tech presented him with its Ruffner Medal, for his notable and distinguished service to the university. He received university-wide outstanding teacher awards at both Purdue and Virginia Tech.

“J.B. is among the most accomplished, faithful, successful, and influential alumni in Virginia Tech history ... He is universally revered and respected by the many engineers he has taught and mentored,” said Robert Parker, current ME department head.
John R. Jones III
Mechanical Engineering; BS, 1967

John R. Jones III takes special pride in his strong family ancestry. His grandfather, Gaetano Laneve Molinary, immigrated to the U.S. from Italy early in 1897, entering the country through Ellis Island. He followed the railroad tracks westward and settled in the one square mile coal-mining town of St. Paul, Va., where the population still remains at a meager 1000 residents.

The next generation Sophia Molinary married John R. Jones, Jr., who remained in St. Paul and started the Tri County Tire Service. Today, the 55-year-old business continues to operate as the second oldest business firm in St. Paul, and is still owned by the Jones family. John R. Jones III, now a retired Senior Vice President of American Electric Power (AEP), spends about two out of every six weeks at his second home in Wise County, checking on the dealership.

“Since I retired, my immediate concerns have become my family, my consulting business, and my home town of St. Paul,” Jones says. He is involved in its local politics, meets regularly with citizens and members of the Town Council, and works with the school system in the town where only 17 percent of the population has a college degree. “I believe I can help affect what happens in St. Paul,” says the philanthropist.

In that regard, Jones and his sister Vicki Berling of Virginia Beach have established the Jones Family Scholarship at the St. Paul High School for youngsters who want to attend Virginia Tech. The first two, Josh Turner and James Christopher Sutherland, started in the fall of 2006 as general engineering students. As long as the students remain in good academic standing and enrolled at Virginia Tech, they are eligible for $1000 a year for five years from the scholarship endowment.

Recalling his own experience attending high school in St. Paul, Jones says, “Everyone knew who you were. They knew your family and they were supportive. We always had someone who would pick us up and spur us on to do more. There was never a question that my sister and I would go to college.” So Jones and his sister are now the ones who are helping spur the students on to do more. St. Paul High School has always had exemplary academics as evidenced by the very high percentage of its graduates attending college.

One of 29 graduates of St. Paul High School in 1961, Jones came to Virginia Tech with a high school record of almost straight A's. A mild case of polio prevented him from joining the Corps of Cadets, but he was able to co-op with Arnold Engineering Development Center, an aerospace company. With only a few quarters to go, he took a leave of absence from Virginia Tech and became an employee of AEP at a power plant near St. Paul. But the wise plant manager gave the young Jones the job in the fall of 1966 with a proviso: he had to return to Virginia Tech at the beginning of the next
spring academic quarter and finish his education.

Jones graduated in 1967 with his degree in mechanical engineering (ME) and spent the next 30 months at AEP’s Clinch River Power Plant. A defining career moment soon came, and Jones found himself applying for and securing a new position in AEP that required him to move to the company’s headquarters in New York City. From then on, Jones’ career was a whirlwind. He never stayed in one location more than five years, and he never kept the same position for more then two, until he relocated to AEP’s headquarters in Columbus, Ohio in 1983.

In his 20s, Jones was building some of the largest power plants in the world, including seven of the nine existing 1,300 megawatt coal-fired units in the world in the 1970s and 1980s. He was also in charge of converting a nuclear plant to coal, the first and only time this has been accomplished. In 1993, the electric power giant asked Jones to assume his first senior vice president position. “You could have knocked me over with a feather,” Jones recalls.

By the late 1990s, Jones was in charge of 16 coal-fired and 17 hydro-generating AEP facilities in seven states. At this point, he started putting teams together. “All of our facilities were like islands. I wanted teams to suggest policy and direction. No one else in the utility industry was using this approach at the time, though other industry was, partly because it was a big cultural change and partly because of peoples’ resistance to change.” Jones still believes that this cultural change will serve AEP well in the 21st Century.

In 1998, Jones became a senior vice president in charge of generation projects. He directed leading edge environmental projects such as flue gas scrubbers (FGS), selective catalytic reduction (SCR) and other measures to remove nitrous oxides plus pursuing innovative new generation alternatives such as Integrated Coal Gasification Combined Cycle (IGCC). “We did this work in anticipation of the Environmental Protection Agency (EPA) changing its rules,” Jones explains. “With spiraling natural gas prices, and the country’s reluctance to move towards nuclear power, we believed we needed to find cleaner ways to burn coal, our most abundant energy source.”

In 2000, AEP named Jones President of a wholly owned subsidiary of the company, Pro Serv, Inc., an organization of some 1400 professionals responsible for the engineering, design, construction and maintenance of AEP’s in-house fleet of power plants and to market those services to others in the power industry. “At the time, we had more than 80 coal, natural gas, nuclear, hydroelectric and wind power plants,” Jones explains. “And our purpose was to hone our competitive edge, lower our costs and be profitable in performing this work for other power producers in the open market.”

When Jones retired from AEP at the end of 2002 after a 36-year career with the utility company, Pro Serv had become the ninth largest power contractor in the country, increasing in revenues from $150 million to $800 million in the 30-month period. Since his retirement, he has remained active by consulting to the power industry.

In retirement, Jones finds that the huge shortage of people who have excelled in project management of engineering, design, construction and maintenance causes his phone to ring “a lot. Primarily, attorneys and utilities are asking me for my expertise as an independent expert. So far, all the requests are about power, but the knowledge is readily transferable to other industries. The root is being experienced in engineering and recognizing how to bring this experience to bear as you build and operate something.”

One project he wants to tackle, combining his consulting and his love of St. Paul, is to assist in building the coal-fired power plant that has been announced in his hometown. He has had preliminary discussions, and hopes this will help with employment opportunities.

At Virginia Tech, Jones will be inducted into the Ut Prosim Society in 2007, following his major gift of $600,000 that ensures the ME Department will be able to continue an innovative Faculty Fellows program, designed to acknowledge and reward faculty in the junior ranks who have shown exceptional merit in research, teaching and/or service. Recipients of the Jones Fellow of Mechanical Engineering will be eligible to receive supplemental funding for a period of up to five years.

Jones has served on the ME Advisory Board since 1997, and was a member of the College of Engineering’s Advisory Board from 1995 until 1999. Since 1995, Jones has also funded an endowed scholarship for ME students. And he has one other current project he is working on for St. Paul — he is helping build a permanent girl’s softball field on a piece of land he owns adjacent to the high school.
Doug B. Juanarena  
Electrical Engineering, Class of 1975, BS

When Doug Juanarena enrolled at Virginia Tech as a freshman in 1971, he had already lived in eight states and two foreign countries. “I was more mature than the average freshman, and my international experiences helped me a lot,” the electrical engineering graduate said today.

His father’s occupation, a fighter pilot, accounted for the family’s globe-trotting. Ironically, despite all of the various cultural memories provided to Doug as a young man growing up, one of his most vivid was from about the age of 15. His father brought the family on a vacation back to his hometown in California, some 25 years after he joined the military. As they walked down the street together, Doug recalled people acknowledging his dad as if he had never left. “For me, it was an ‘aha’ moment,” Juanarena acknowledged.

That impressionable experience of his father being a “hometown celebrity” helps to account for why, when Doug retired very early in his career, before he turned 50, he hurried on “home” to Blacksburg, Va. The successful entrepreneur had already sold his first two companies. Today, he is busier than ever, working as an angel investor, serving as vice-president of the Blacksburg office of Rackspace Hosting, Inc., and acting as a board member of the Virginia Tech Corporate Research Center since 2002, to name just a few of his activities.

It didn’t bother Juanarena that the sleepy Blacksburg of the 1970s was a bit different from the thriving University town it has become. Back in 1971 when Juanarena enrolled in electrical engineering, he was almost tunnel vision in his pursuit of a degree.

He had “tinkered” with electricity since second grade, he recalled, and won the 1968 Virginia state science fair when he was in tenth grade. His project was the design and fabrication of a digital computer, which he built from start to finish. Putting Juanarena’s efforts in historical context, his computer was developed very close to when Jack Kilby, who built the first integrated circuit, won the 1970 National Medal of Science.

Shortly after Juanarena’s arrival at Virginia Tech, Wayne Bennett, a member of the faculty, took notice of his intellect and offered him a part-time position in a lab as a technician wiring computers. Juanarena jumped at the opportunity since the young inventor was earning his spending money scrubbing dishes 20 hours a week at the Shultz Dining Hall.

By his junior year, Juanarena secured a summer internship at NASA Langley’s Instrument Research Division. In this three-month job, before he even graduated from Virginia Tech, he developed a Machmeter – an instrument for a wind tunnel that shows the ratio of the true airspeed of an aircraft to the speed of sound. This Machmeter remained in use at NASA until the late 1980s, and was one of about five projects Juanarena worked on that summer at the federal space agency.

When the time came for his college graduation, Bennett hoped to persuade Juanarena to stay on for graduate
school, a tempting offer for the young man who had also become president of his fraternity, Sigma Pi. But NASA offered him an “extremely creative” position in its measurement physics branch that was “full of smart people. I was in hog heaven,” he smiled.

Within three years of his NASA employment, he had his next rather stunning achievement as the lead engineer on the development of the electronic pressure scanner. It revolutionized wind tunnel measurements and requests for NASA to provide copies grew. Since NASA is not in the manufacturing business, the federal agency actually encouraged him to leave and start his own business, licensing this technology. After a lot of internal bickering with himself about the fun he was having at NASA versus setting out on an uncharted territory with no classroom business skills to his name, Juanarena started Pressure Systems, Inc., (PSI) in Hampton, Va. It was 1978, only three years after he received his Virginia Tech diploma.

Long story short – the pressure scanner became a world standard for wind tunnel, propulsion, and flight testing. And along the way, Juanarena educated himself on how to visit banks and raise money for his company, how to demonstrate traction to his financial backers, and how to sell his product. At 25, he started hitting on the right techniques, pulling in contracts with Boeing, McDonnell Douglas, Airbus, and other similar companies. “I had the right technology at the right time,” he explained simply.

That “time” was the end of the Cold War complicated by the doubling of the cost of energy. When President Reagan ceased the Cold War, his strategy was to build up the nation’s defense, creating a major uptick in the aeronautical industry. Entering the picture is Juanarena with his pressure scanner demonstrating much needed improved aviation efficiency. His success in this niche soon attracted automotive companies that were also seeking greater fuel savings, and they too adopted Juanarena’s technology.

Pressure Systems, Inc., also benefitted from the arrival of coinciding timely technologies. Microelectromechanical systems or MEMS sensors, the continued development of the microprocessor and its application in computer numerical controlled machining, were now allowing manufacturing repetition at a low price.


Juanarena’s 20s, 30s, and 40s would be considered a calendar nightmare to many. A little more than two years after his graduation, he married Sue in December of 1977. He quit his position with NASA six months later in June of 1978, the same time he was getting PSI off the ground. He and Sue started having their three children, Carmen, Brian and Greg. He was continually traveling on behalf of the company, and he started a second company, Keller-PSI, Inc., in 1986.

By the time his daughter was 13, he said he decided “to get off the treadmill,” selling PSI in 1996 to Britain’s Roxboro Group PLC. However he did stay on as its CEO until 2000. He also sold Keller-PSI, a company he was also CEO of from its inception in 1986 until 1999 to a Swiss entity.

By that time, Juanarena had already reconnected with his alma mater in numerous ways. Paul Torgersen, dean of Virginia Tech’s College of Engineering from 1970 until 1990, had met and recruited Juanarena to serve on the College Advisory Board in the 1980s, and later the ECE Advisory Board asked him to join in the 1990s. Juanarena had mentored some of the University’s ECE faculty in their efforts at entrepreneurship. And he recalled that “aha” moment when he walked down the California street with his father, and he was not an anonymous figure. Returning to Blacksburg in 2000 was, in many ways, like going home for the under age “retired” man. He did not stay retired long.

He soon joined one of the spin-off companies from the ECE faculty and acted as a co-founder, president, and chief executive officer of Luna Technologies, designing and building instrumentation for measuring dispersion in high bandwidth fiber optic components until 2002. Simultaneously he served as vice chairman, board member, and director of business development for Luna Innovations until 2005.

In 2005, he started GenTek Ventures, LLC, assisting technology companies with strategic planning, raising of equity capital, and enterprise development. As an angel investor and adviser, Juanarena has mentored a number of start-up companies through GenTek including another ECE spin-off Panaphase. A second firm he worked with was Webmail.us, led by Pat Mathews, now a part of Rackspace Hosting, a complete cloud platform for building websites and applications.

His relationship grew with Mathews, now senior vice president of corporate development, and in 2010 Juanarena was named vice-president and site leader of Rackspace Hosting in Blacksburg. Within two years, Juanarena grew this company location to more than 120 employees. Rackspace advertises itself as the leading specialist in its field, and its Blacksburg office is the company’s second largest software development center. The company’s San Antonio headquarters ranks first.

He still runs GenTek, making it seem as he now has two day jobs, Juanarena quipped.

With yet another success on his resume, Juanarena imparts his vast entrepreneurial knowledge twice a year to Virginia Tech engineering students in Paul Torgersen’s Theory of Organization class for juniors and seniors. He speaks about “Starting a Technology Business.”

And he is active in the community, serving as chair of the Blacksburg Partnership from 2008 until 2010. The Blacksburg Partnership is a non-profit, independent economic development organization formed by the town, business and university communities. Its purpose is to bolster the vitality of Blacksburg through projects that attract visitors and retail prospects.

So the boy who never had a real home growing up can now walk down the streets of Blacksburg as his father did in California, and feel like a strong part of a thriving community.

For the first 13 years of his life, Dennis Kamber grew up in a rental row house in an impoverished area of northwest Washington, D.C. Earlier, his mother, who was duty-bound to drop out of high school when her father died unexpectedly, was forced to work full time to support her mother and her younger brother. She attended classes in the evening to obtain her degree.

“Mom had a tough adolescence. She worked hard to put her younger brother through college and to support my grandmother who had no way to earn a living after my grandfather died. My mother was married for three years, pregnant with me, when my father, who I never met, left us,” Mr. Kamber recalls. “But she didn’t let these events dispirit her. She obtained a clerical position in the federal government, and using her intelligence, instinctive skills, and convivial personality, she steadily advanced. She became a respected management analyst and forms designer for the Department of the Navy. She wrote a widely used text book for the Navy and conducted training courses at naval installations.”

After Dennis turned 13, his mother had enough savings to buy a home in a better neighborhood in D.C., a true feat for a single woman in the 1950s. He helped with expenses, working as a stock boy after school and on Saturdays during his last two years of high school.

Mr. Kamber’s mother died three years ago, and his regret today is she could not be present for his induction into the Academy of Engineering Excellence. “She was a self-made woman, against the odds. When I was younger, I didn’t realize how strongly motivated she was. Mom was determined that I would attend college and she managed to budget her income in order to fund my college tuition. My accomplishments are pale in comparison with what my mother accomplished.”

Those are humble words from a man who founded and built his own company, Kamber Engineering, into a major local engineering firm practicing in the Maryland, Northern Virginia, and West Virginia regions. During his career, he has managed projects as large as $3.5 billion, and continues to work today as senior vice president of Global Water Management for ARCADIS, a top five global company focusing on infrastructure, the environment, and buildings. Currently, he is playing a major role in managing the design of post-Katrina flood risk reduction measures around New Orleans.

The 1964 engineering graduate was once a physics major. But after assisting a research Ph.D. who, he laughingly says “did not know the operating end of a screwdriver,” he decided to switch disciplines to the less-abstract world of civil engineering.
As a member of the Virginia Tech Corps of Cadets, he was on the Freshman Rifle Team and the ranking junior of “D” Squadron, then housed in Eggleston Hall. He jokingly described himself as a “mediocre athlete” on the track team. He was a contributing member of the Alpha Phi Omega service fraternity, and retains his membership in the American Society of Civil Engineers and the American Society of Military Engineers, after joining the student chapters at Virginia Tech.

Upon graduation, he spent one year at David Volk-ert and Associates until he was recruited to a start-up company, Bertram D. Tallamy and Associates. Mr. Kamber says, “Bert Tallamy was the sharpest, most visionary engineer I ever had the pleasure of meeting.” He had previously been the first federal highway administrator for the U.S. and conceived of and started the U.S. Interstate Highway system under President Eisenhower. “One day Bert Tallamy, then in his 80s, called me into his office to inquire about a project, and I mistakenly thought I could bluff my way through the briefing. I was not properly prepared to answer his questions, and I left his office feeling like a whipped pup. I never made that mistake again and learned how to be organized for similar encounters,” he reveals.

His days with Tallamy served him well, as he and two of his colleagues eventually left to form their own company. They worked off a shoestring budget from Mr. Kamber’s apartment. One of the three partners soon left, and the young entrepreneur and his colleague, John Watkins, opened a small office. After three years, Watkins left, and Kamber Engineering Inc. was founded.

“I had a innovative firm and a talented creative staff. We did some unique work in wastewater treatment, and designed the first sequenced batch activated sludge plant which won a national engineering award in 1986,” he says. Kamber Engineering also held contracts with the National Park Service for work at Harper’s Ferry, and performed work on such Washington sites as the Kennedy Center and the Jefferson Memorial. Kamber held multiple contracts with the Naval Facilities Engineering Command and provided engineering support at the U.S. Naval Academy, Patuxent Naval Air Station, and Camp David.

“We grew to about 165 employees. Owning a company had its good and bad points. Basically, every day I was betting the farm. My personal financial stability was on the line, and I would sometimes have to dip into my personal account to make a payroll. As the only owner, it was an exciting adventure interwoven with moments of sheer terror,” he says.

When Chester Engineers of Pittsburgh approached Mr. Kamber, wanting to buy his company, he accepted with the intent of expanding geography and services. He stayed on as a member of the senior management team until Chester’s parent company sold them to another entity. Mr. Kamber planned to take a year to engage in other activities. However, he soon accepted a position as a principal in Delon Hampton Associates, based on a long-term personal relationship with the owner. After three years, he joined Earth Tech, and managed the Water/Wastewater Practice in North America. He ran the practice for five years, catapulting it from an unranked company to a top 10 ranking by Engineering News Record. In January 2003 he joined ARCADIS.

Mr. Kamber is a registered professional engineer and board certified environmental engineer. In 2007 he captured the Past Presidents’ Award from the American Council for Engineering Companies, a group of some 5,600 firms, and the ARCADIS International Innovation Award. He received the George Schroepfer Medal for excellence in wastewater facilities design, an award presented by the Water Environment Federation; and also the Leonard Glass Award, a regional award of the Chesapeake Water Environment Federation for innovative engineering of wastewater facilities. At Virginia Tech, he served on the CEE Advisory Board for eight years including two years as the chair, and four years on the College of Engineering’s Advisory Board.

When Mr. Kamber joked about “betting the farm” worrying about the day-to-day expenses incurred by Kamber Engineering, he was actually providing an insight into his love of horses. As a young boy, he would collect soda bottles and redeem them for the two-cents deposit until he obtained $2 so he could ride a horse for an hour at a local riding stable. Early on, he actually needed $4 because he was “too small” to ride alone, and had to pay for a stable guide to accompany him.

“I was always motivated by the vision of having a place in the country, with horses,” he says. So when he graduated from Virginia Tech, he acquired open acreage in 1968. He also bought his first horse, an unbroken three year old, and boarded her with friends. Eventually he moved the filly to a location where his future wife, Sherry, and her father kept their horses.

Sherry was an avid show equestrian and an excellent trainer. Initially, Sherry was agitated with Dennis’ intrusion on her stable domain. However, they became friends, supporting one another alternatively at horse shows, polo matches, and together at fox hunts. Now married for 37 years, they have raised thoroughbreds since 1974 on their Roundabout Farm, located in Poolesville, Md. They have owned as many as 23 mares and foals at a time. “Sherry is my best friend, business partner, and the anchor in my life,” he says. “We have shared magnificent times together and always supported each other during the hardships.”

The Kambers’ are members of Virginia Tech’s Ut Prosim Society, the Committee of 100, and have endowed an engineering scholarship. They have a son, Adam, a graduate of Virginia Tech in 2000 with a degree in management science and information technology, who lives in McLean, Va.
Dr. George E. Keller, II  
B.S., Chemical Engineering, 1955

George Keller's career has soared on the scientific ladder of success. Retired today from an extremely productive life with industry where he says he thrived in “an invention mode,” Mr. Keller has now launched a new career. The inventor co-founded a start-up company, NewCarbon, Inc. In this capacity, his goals remain challenging. His plan is to create high tech jobs and high tech materials in his hometown area of Charleston, West Virginia.

The 1955 chemical engineering graduate of Virginia Tech, who went on to get his master’s and doctoral degrees at Penn State, spent the bulk of his career with Union Carbide where he was given great freedom in his work. As the manager of the Separations and Process Fundamentals Skill Center for 26 years, he invented a host of new technologies and championed and led significant efforts by others to bring these technologies to commercial fruition. “We had so many ideas and eventually just ran out of the ability to do something about them,” he recalls.

One of these efforts by him and his team earned Union Carbide a runner-up Kirkpatrick Honor Award in 1981 for the top commercialized chemical engineering technology in the world. “This was the project I have smiled most about because it spoke to a human need,” Mr. Keller says. He and a colleague developed a practical machine for the delivery of oxygen to people who required the gas on a regular basis, but who lived in their own homes. Mr. Keller’s machine eliminated the earlier technology where a person was connected to a bulky five foot pressurized cylinder of oxygen.

Union Carbide received a second Kirkpatrick Award in 1991, partially for Mr. Keller’s leadership of his group in the development of a spray-coating technology involving the use of supercritical carbon dioxide as an organic-solvent replacement. This technology reduces volatile organic compound emissions by about 70 percent and substantially improves the quality of the coating. The furniture, auto sub-assembly, and kitchenware industries, among others, now use this technology.

Another outstanding accomplishment attributed to Mr. Keller and his center includes the discovery of a new way to form ethylene, the basic chemical building block for petrochemicals. This ethylene is derived from methane, an abundant raw material. His discovery opens the possibility of using the copious methane for olefin production.

Mr. Keller’s career accomplishments at Union Carbide earned him membership in the prestigious National Academy of Engineering and the position of Fellow in the American Institute of Chemical Engineers (AIChE) and in the American Institute of Chemists. Chemical Engineering magazine presented him with its Outstanding Accomplishment award in 1990. Five years later, he became AIChE’s first non-academic winner of the Clarence Gerhold Award for Excellence in Separation Science and Technology.

When Mr. Keller retired in 1997, he knew he wanted to remain active. With 40-plus years of experience in chemical engineering, he decided to use his background to try and raise the standard of living in his area. His plan was to assist West Virginia University commercialize a process for the production of a special coal-based pitch, a precursor for a host of high-tech carbon and graphite products. Since co-founding NewCarbon Inc., he has enticed a chemical plant to work with him to commercialize the technology.

“I am having more fun than a body should have,” Mr. Keller grins.
Hugh P. Kelly  
B.S., Electrical Engineering, 1937

If you are searching the World Wide Web for the memorable events of the 1960s, one of the sites that features the “revolutionary” occurrences of this decade shows only eight noteworthy events for 1962. Among them were the introduction of Polaroid’s instant photos, Rachel Carson’s publishing of Silent Spring, the Beatles production of their first number one hit, “Love Me Do,” and AT&T’s launching of Telestar, a communications satellite that performed the first live transmission between the U.S. and Europe.

Virginia Tech’s College of Engineering takes special pride in this last achievement by Bell Labs, a branch of AT&T, where one of its alumni, Hugh P. Kelly, worked. Mr. Kelly was instrumental in the Telestar project. His role was the design and construction of the horn antenna that, in conjunction with Telestar, provided a perfect picture of an event at the time it was occurring.

Mr. Kelly, who received both his bachelor’s and master’s degrees in electrical engineering from Virginia Tech in 1937 and in 1938, respectively, joined the Richmond, Virginia telephone company after graduation. His work in Richmond truly charted the course of his life. There, he met his future wife, Ethel, but it took him two years before he asked her out on a date. And his future mother-in-law was most enamored by the thoughts of Hugh marrying her daughter, suggesting the idea long before the question was asked. They eventually married on Sept. 18, 1941.

And, as he was about to receive a U.S. Navy commission in 1941 to serve in World War II, Bell Labs selected him for its New York office to conduct research communications work during the global conflict. He and Ethel moved to New York where they spent the next five years, and then they moved to Bell Labs corporate headquarters in New Jersey.

His work during the war impressed the communications giant, and when the surrender was signed, Mr. Kelly was one of just a handful of men the company retained. As Mr. Kelly moved up the corporate ladder, he was eventually placed in charge of developing the Trans Atlantic Cable in 1960. He and Ethel spent six months in London and five months in Paris. He saved the company millions of dollars by finishing the cable well ahead of schedule. After the success of this project and the reputation he earned, the French government was persuaded to buy into the Telestar proposal.

“My husband loved every minute of his work,” Mrs. Kelly says. She recalls that when a cover over Telestar collapsed, he left his management position to work side by side with the men for three days and three nights to repair the problem. “He was the type of person who could do anything, even the plumbing work at home.”

When the Telestar link between the U.S. to France was completed, the French government recognized Mr. Kelly for his efforts, presenting him with its prestigious Merite Postal Award in 1962 at a party hosted for all of the French and Americans who had worked on the antenna. Mr. Kelly later worked on the Telestar II project.

But as demanding as his job was, Mrs. Kelly recalls he always had time for their marriage. She traveled with him constantly. Mrs. Kelly recalls, “We had a beautiful marriage.”

Hugh Kelly died in January of 1989. He left behind a legacy of excellence that will long be an inspiration for future engineers. In April of 1999, Ethel Kelly was inducted into Virginia Tech’s Ut Prosim Society in honor of her generosity and devotion to the College of Engineering. She also established the Hugh P. and Ethel C. Kelly Professorship of Electrical and Computer Engineering.
William Kilgore was born in Stowe, W. Va., in 1935 in a coal camp where his dad was a coal miner. In those days, the large mines had massive work forces, housed primarily by ethnic considerations. Workers did not own these homes. But the young Kilgore had good karma, and his lifestyle improved quickly.

When Kilgore was seven, his uncle Thomas Pritchard, Class of 1923 at Virginia Tech, established a mine near Grundy, Va. Pritchard then offered Kilgore’s father employment as superintendent. The Kilgores moved to Virginia, and young Bill prospered in the family environment.

“My uncle had a big influence on me as I grew up. He lived a good lifestyle and had a strong work ethic and discipline. I was like a pseudo son to him,” Kilgore recalls. Pritchard offered to pay for Kilgore’s college education, and did not limit his choices. “He did tell me that Virginia Tech was pretty hard, so I looked at the University of Kentucky and Ohio State, but I chose Virginia Tech because it was closer to home and less expensive,” Kilgore says. “I worked at my uncle’s coal mine during the summers while I was at Virginia Tech, as well as some weekends and holidays.”

At first, he enrolled in chemical engineering, thinking that he would get out of the coal mining business. But, he says, it didn’t take him long to transfer back to a more familiar field in the Mining Engineering Department where the classes were small, and “the professors were practical people who had been around coal mines.” There were only six members in his senior class.

“Mining does get in your blood. Every day there are changes in the geologic conditions of the earth. There is new ground every day. And I saw my uncle as an entrepreneur, and I thought I would like to be one also,” Kilgore reminisces.

After graduation, he went to work for Jewell Ridge Coal Corporation of Tazewell, Va., another family owned operation, which was eventually sold to The Pittston Company. He learned more of the basics of the mining operation, starting as a rodman on a survey crew and advancing to a transit man. He became a project engineer, serving Jewell in its construction of three coal preparation plants. Within four years he was promoted to resident engineer of the Virginia Division, and in 1962 promoted to chief engineer in charge of all engineering and coal preparation for the Jewell Ridge mines in Virginia, Kentucky, and West Virginia. By this time he was a registered professional engineer in these three states.

In 1963, Kilgore’s uncle, in poor health, asked him to return to his family business. He obliged his mentor and, at 28, became the General Manager and President of Margaret Ann Coal Corp., of Conway, Va. “My uncle died in September of 1964, and I managed the company until I could sell it. The market was bad, we did not have a large reserve base, and...
I did not want my Aunt Margaret to worry about the future of the mine. We sold the mine to a larger Ohio company,” Kilgore says. He then took care of his aunt’s finances until her death in 1987, and he continues to manage trust funds for his aunt’s sole surviving sister and a cousin.

After the sale of his family operation, Kilgore became the division engineer of Kentucky Carbon, which produced over a million tons of coal per year, a threefold increase over Margaret Ann Coal Corp. After three years he was promoted to division manager where for five years his group averaged in excess of 25 tons of coal per payroll man per day.

He almost left the coal industry while working at Kentucky Carbon because the only fatalities that occurred during his 50-year management career with the mining industry happened during his administration of this company. Unique events took the lives of four miners, and to this day, if Kilgore gets a call in the middle of the night, he says he “clears the bed in a panic.”

Kilgore saw his way through these difficult times, moving around a number of times for the next 20 years. He followed Kentucky Carbon with six years at Carbon Industries of Charleston, W.Va., as its Vice-President. In 1980 he spent a year as Vice-President of Coastal States Energy, Inc., of Houston, Texas. In October of 1981 he decided to become an independent consultant, assisting with several coal property acquisitions. After 16 months, he became the district manager for ChemLink, responsible for chemical sales to the coal industry in six states including Virginia. Two years later he rejoined the mining industry, becoming the mine manager for Enoxy Coal, Inc., of West Virginia. In less than a year, he was promoted to Vice-President and General Manager, responsible for all production, cost, safety, and environmental aspects of four major mine complexes producing over four million tons of coal annually.

In 1994, Kilgore decided it was past time for his entrepreneurial aspirations, after spending the five previous years as President, CEO and Director of Agipcoal, USA. When Arch Minerals bought the company, Kilgore partnered with his long-time friend F.D. “Red” Robertson, also a Virginia Tech MinE graduate of Grundy, and James O. Bunn, as the coal mine owners/operating partners of two mining complexes, Kanawha Eagle, LLC and Mossy Eagle, LLC. Robertson describes Kilgore as “one of the most outstanding mining engineers in the U.S.”

“Red and I go back to sixth grade together. When I managed Agipcoal, owned by the Italians, I had no one in this country to report to. So I would stop by his office weekly and bounce ideas off of him,” Kilgore recalls. The advice must have helped because Kilgore moved that company from a starting point of two and a half million tons of coal production with 100 million tons of coal production with 100 million tons of coal to six and a half million tons of coal sales with 500 million tons in reserve. “I was able to manage it like an entrepre-
Alfred E. Knobler
1938, Ceramic Engineering

Alfred Knobler didn’t know what he was getting into when he left his native New York City’s Bronx immigrant ghetto and arrived in Blacksburg, Virginia in 1934. Although he found many differences between the teeming city streets and the Virginia Tech campus, he focused on the similarities. “When I came to Tech,” he recalls, “it was mostly poor kids trying to make it, bright kids who were first-generation college.” He quickly felt at home. The son of working-class Jewish immigrants, he too was the first in his family to attend college. His fondness for Virginia Tech has lasted a lifetime.

Alfred Knobler, “Alf” as he was known, graduated in 1938 with a degree in ceramic engineering (now materials science engineering). Hitchhiking to Chattanooga in search of a job, he listened to a man who gave him a ride. “You talk good,” the fellow said. “You should be in sales.” The young Knobler landed a job selling for Trenton Potteries in New Jersey and within a year was making $8,400, a remarkable annual income in the depths of the Depression.

During World War II, Mr. Knobler served as a factory inspector for the War Department. After the war he opened his own sales and import company in the gift industry which he quickly developed into a major success. In 1949 Mr. Knobler purchased a small hand-blown-glass factory in West Virginia, which he renamed The Pilgrim Glass Corporation. Pilgrim Glass grew steadily for the rest of the millennium and has been at the forefront of technological advances in glass production. Pilgrim stands today as the world’s only producer of the extraordinary multi-layered, multi-colored work known as American Cameo Art Glass.

From an early age this engineer was concerned with political issues. At 15 years old in 1930, he and his friends picketed Yankee Stadium demanding that black baseball players be admitted to the major leagues. At Pilgrim, among his first acts was to institute a medical plan for his employees. As the company grew in size and success, more benefits were added, including college scholarships for employees’ children. Mr. Knobler, who once considered being a union organizer, says, “I support unions. Workers need someone to look out for their needs.”

At 84, Mr. Knobler continues to act on his concerns. He endows the Alfred E. Knobler Scholarship Program at Virginia Tech, which funds an annual English Department scholarship for minority students, and he supports minority scholarships in the University’s Material Science Engineering Department. He serves on the Board of Directors of the Children’s Place, a childcare center in Huntington, West Virginia.

And he has returned to his roots. Mr. Knobler has adopted New York City Public School 42, the same P.S. 42 elementary school from which he graduated in 1928. After visiting and finding it little changed from the 1920s, he has provided the school with badly needed funds and materials and volunteers his time to discuss with the students the economic, social and political history of their neighborhood. When he was growing up in that same neighborhood he knew women up and down the block whom he called “Grandma.” Now the 600 African-American and Hispanic children at P.S. 42 affectionately shout “Hi, Grandpa Alfred!” when they see him in the halls on his weekly visits.

Mr. Knobler visits Virginia Tech regularly as a member of the College of Engineering’s Committee of 100, the University’s Ut Prosim Society, and the Materials Science Engineering Advisory Board. If the students don’t call him “Grandpa Alfred,” he is nevertheless proud to be an active member of the Virginia Tech family.

Alfred E. Knobler is CEO of The Pilgrim Glass Corporation and Knobler International, Ltd. He lives in New York City. He has two children — Peter, a writer, and Joanna, a doctor — and three grandchildren, all of New York City.
Christopher C. Kraft, Jr.
1944, Aeronautical Engineering

When Christopher C. Kraft, Jr. won the 1999 National Space Trophy from Rotary International, the group described him as “a driving force in the U.S. human space flight program from its beginnings to the Space Shuttle era, a man whose accomplishments have become legendary.”

Dr. Kraft's career is indeed phenomenal. He was instrumental in the decision to land an astronaut on the moon. He led the planning and operational control of programs from the two suborbital Mercury missions through Gemini, Apollo, Skylab, and the Apollo Soyuz/test project. He was deeply involved in the development of the Space Shuttle. During its definition and design studies, he played a vital role in the decision-making process that created the Space Shuttle program, and he determined the initial configuration of the Space Shuttle system, a new concept in space transportation. Dr. Kraft was the Director of the National Aeronautics and Space Administration's (NASA) Lyndon B. Johnson Space Center in Houston, Texas from January 1972 to August 1982.

A native Virginian, he was born in Phoebus in 1924, two years prior to the launching of the first liquid-fueled rocket by the American physicist Robert Goddard. The influence of high school teachers led him to his choice of engineering as a profession, and he selected Virginia Tech. Graduating in 1944 with a bachelor's degree in aeronautical engineering, he immediately joined the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics (NACA), the precursor of NASA.

In October 1958, Dr. Kraft was selected as one of the original members of the Space Task Group, the organization established to manage the Project Mercury. The group developed the basic concepts of the Mercury Project that launched the human space flight program for the United States. He personally served as the flight director for all of the Mercury missions and many of the Gemini missions. His contributions to the space program were recognized by Time magazine when it selected him for its cover photo in the August 27, 1965 issue.

Dr. Kraft retired from NASA in 1982. In a tribute to his career at the time, the Roanoke Times editorialized that he “epitomized the space age...he probably instilled more confidence in our space program than any slick campaign could have done, because of his knowledge and ability to impart it. He knew more about all of the systems aboard our spacecraft than anyone else, and was in the unenviable position of making quick, life and death decision about the flights. He was the ultimate technical generalist. Even his name seemed perfect for the job.”

Since his retirement, Dr. Kraft has consulted for Rockwell International, IBM, and a number of other companies. His honors include membership in the prestigious National Academy of Engineering, the International Academy of Astronautics of the International Astronautical Association, and the Aerospace Medical Association. He is an Honorary Fellow of the American Institute of Aeronautics and Astronautics and a Fellow of the American Astronautical Society. He is a member of the College of Engineering's Committee of 100.

Among his awards, he received the NASA Outstanding Leadership Medal from the President of the United States in 1963, the Spirit of St. Louis Medal from the American Society of Mechanical Engineers (ASME) in 1965, the Virginian of the Year Award from the Virginia Press Association in 1967, the ASME Medal in 1973, and the Goddard Memorial Trophy from the National Space Club in 1979. He also received the NASA Distinguished Service Medal, the highest NASA award, four times.

He is married to the former Elizabeth Anne Turnbull of Hampton, Va. They currently reside in Clear Lake area of Houston and they have two children.
John H. Kroehling
B.S., Ceramic Engineering, 1948

John Kroehling had planned on majoring in chemical engineering (ChE) when he arrived at Virginia Tech in 1942. His acceptance was based on his high school academic record and a letter of recommendation by the principal of Jonathan Dayton Regional High School in Springfield, N.J. His parents drove him to Blacksburg and waited with him through the various indoctrinations, the last of which was a physical exam under the watchful eyes of a football coach.

Impressed, the trainer asked him to join the freshman squad, and John bid his parents goodbye on the way to his first practice. His athletic prowess also landed him positions with varsity wrestling and baseball, as a pitcher.

The draft board came calling in the middle of the freshman year, but allowed him to report for induction in June 1943. After basic training, he spent three months in the ASTP program at Armour Institute (now Illinois Institute of Technology), gaining one quarter of sophomore year credits. He then transferred to the 96th Infantry Division. Amphibious maneuvers and the invasions of Leyte and Okinawa followed. In January, 1946, he came home with a Purple Heart and a Soldiers Medal.

He returned to campus in spring of '46, to find that the ChE department head felt “students in his department did not have time for athletics.” So Mr. Kroehling transferred to ceramic engineering. This department head, John Whittemore, had no objections to his athletic endeavors. He played on the '46 and '47 football teams, for which he earned $50/month, and he attended classes year round to graduate with the June '48 class. He attained academic honors and membership in Sigma Gamma Epsilon, a mineral industries professional fraternity, and KERAMOS, a national fraternity of ceramic engineers.

Based on his undergraduate thesis, the development of lightweight aggregate to replace cinders in cement masonry building blocks using local shale from Webster, Va., he was hired by Virginia Lightweight Aggregate Company. After two years and with the help of Dr. Whittemore, Mr. Kroehling moved to General Refractories Company where he developed sales in areas that had been ignored since WWII.

In 1963 Mr. Kroehling accepted an offer from Dupont to test the performance of various refractory compositions in the most severe conditions in steel mills. After two years of trials he reported the products were competitive in performance but not in price. However, their technology was applicable to production of ceramic honeycomb and other complex ceramic shapes. Alumina and mullite honeycomb were produced, followed by the development of a precious metal catalyst bonded to the high surface area, which opened the doors for DuPont to offer catalyst modules and catalytic oxidation systems for low temperature oxidation of gaseous air pollutants.

He worked with DuPont until it sold the small business venture to Engelhard Industries in 1983. Mr. Kroehling took early retirement, went with the business, and spent the next three years designing and selling catalyst modules to builders of oxidation systems and complete systems to end users. He retired again in 1986 to take a small equity position with an equipment supplier in Brooklyn, a specialty sheet metal shop that had assembled the systems for DuPont and Engelhard. Engelhard agreed to supply him with a catalyst-coated honeycomb. For the next five years he designed and sold catalyst modules and full systems to auto assembly plants in the U.S. and chemical process plants worldwide.

In August '91 he retired from active participation in the Brooklyn firm to start JH Kroehling Associates. He operates the business from his new home in Williamsburg, Va., continuing to provide catalyst maintenance services to General Motors, Chrysler, and Toyota assembly plants. He also designs new systems for other metal coating operations, bakeries and textile mills. He believes the successful use of catalysis is due to his originating and putting into practice the use of an activated alumina coated ceramic grid positioned between a burner and catalyst bed to minimize masking materials getting to the catalyst surface. Another of his innovations is the use of boundary layers in the catalyst module design to improve turbulence within the back pressure limits.

The grandson of German immigrants, his own father and mother were denied education beyond grades 10 and 8 respectively, to work full time to support their families. His father attained “engineer status” after many years experience at Western Electric Co. This work ethic was passed on to Mr. Kroehling and to his children: a son with a degree in statistics, Virginia Tech class of '83, and a masters in engineering management, and a daughter with a BS in foreign service from Georgetown. His first son, a marine biologist, died at age 25.

Joan, his wife of 46 years, keeps the books for JH Kroehling Associates, and volunteers in a number of charitable organizations. They support endowments for scholarships in the MSE and Statistics Departments at Virginia Tech, and have provided a deferred gift to be split between the departments. Mr. Kroehling serves on the MSE department advisory board and is a member of the College of Engineering Committee of 100. He claims to have no real hobbies, other than yard work and regular workouts at the local recreation center. Since longevity seems to run in his family, at 80 years of age, the prospect of final retirement is probably a few years away.
A native of India, Satish Kulkarni’s career has taken him around the world and back home again since graduating with a Ph.D. from Virginia Tech in 1973. An alumnus of Calcutta University and Indian Institute of Technology Kanpur, Kulkarni says his choice of Virginia Tech for his doctoral degree in 1969 was easy. He was attracted by the wide scope of the university’s engineering science and mechanics (ESM) department, which broadened his view of engineering, a field he says often can become too compartmentalized. Attending Virginia Tech would be his first trip to the United States. Moving to the southern United States in the late 1960s to obtain his doctorate could have been challenging, but Dr. Kulkarni says his welcome by fellow students, faculty and the community of Blacksburg was strong and constant. “Coming as an immigrant to the United States and getting a top-quality education” was the beginning of a successful career, Dr. Kulkarni says.

As a doctoral student under such advisers as Daniel Frederick, head of the ESM department from 1970 to 1989, Dr. Kulkarni says he was allowed to think creatively and independently in problem solving. This ability to think outside the box set the course for his career, including his recently ended assignment as counselor for science, technology, environment and health affairs at the U.S. Embassy in New Delhi, India. Dr. Frederick, now retired, recalls Dr. Kulkarni as a graduate student and the two men keep in touch. “He was an excellent student and researcher. … He was very receptive to exploring new ideas,” Dr. Frederick says. “He was a credit to our department. He’s done very well.”

The Embassy assignment is a point of pride for Dr. Kulkarni, who says he was honored to return to his native country, representing the interests of the United States, of which he is a citizen. His duties were diverse: He regularly interacted with leaders of Indian government, laboratories, universities and colleges and industries, analyzed and reported on Indian science, technology, environment and health developments to the U.S. Department of State, and oversaw programs between the two countries that touched on nuclear and space research, climate change efforts, wildlife, health care initiatives involving avian influenza preparedness, polio eradication and HIV/AIDS prevention and control.

Dr. Kulkarni also played an important behind-the-scenes role in the United States-India Nuclear Cooperation Approval and Non-proliferation Enhancement Act of 2008. Signed by leaders of both countries, the pact stipulates that India separate its civil and military nuclear facilities and place civilian operations under International Atomic Energy Agency
safeguards. In exchange, the United States is to work toward full civil nuclear cooperation with India. News of the October agreement was buried under headlines of U.S. federal bailouts of Wall Street firms and the presidential election, but Ishwar Puri watched closely. Head of Virginia Tech’s ESM department, Dr. Puri says Dr. Kulkarni’s work may be glossed over by reporting on the involved political heavyweights. “Playing a role in the nuclear treaty between the United States and India will have a lasting impact for years, if not generations,” Dr. Puri says. “The fact that we have a Virginia Tech alumnus in the middle of this is a proud accomplishment.”

Dr. Kulkarni also was fostering work of a different kind between the United States and India, helping to create a Virginia Tech-India initiative by bringing together government officials, scientists, and academic executives of both sides. The exact India-based university still is under consideration, but the program will encourage the exchange of research and studies between the two countries. Additionally, Dr. Kulkarni helped develop a joint Indo-U.S. effort in innovation and entrepreneurship in science and technology.

As of press time, Dr. Kulkarni’s position at the embassy was coming to an end and he was to remain in India for a few months, visiting family and sightseeing.

Prior to his appointment to the U.S. Embassy in 2006, Dr. Kulkarni served as executive director at the University of California’s Office of the President (UCOP) Laboratory Programs/Laboratory Management office. There, his duties were to align the efforts of Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory and Los Alamos National Laboratory and 10 university campuses. His work involved utilizing and leveraging the various facilities’ unique strengths to solve national problems and enhance collaborations between faculty/students and laboratory staff. He served as editor of the resulting UCOP publication, “University of California: 10 Campuses working with 3 National Laboratories - Unparalleled Contributions to Education, Discovery and Public Service.”

Dr. Kulkarni already was familiar with the Livermore facility, having worked as division leader at the lab’s new technologies engineering division. His duties at Livermore included national and homeland security, nonproliferation, and energy and environment and biosciences programs with the U.S. Department of Energy, the Department of Defense, and several universities, national laboratories, and industrial and foreign institutions. Before joining LLNL in 1978, Dr. Kulkarni worked for Materials Sciences Corp. in Blue Bell, Pa., as program manager for the advanced composites division. He also has worked as a reactor internals computational analyst at Babcock & Wilcox Nuclear Power Generation Division in Lynchburg, Va., and as a design engineer with Tata Consulting Engineers in Mumbai, India.

Dr. Kulkarni’s awards are many. He is the recipient of the Society of Sigma XI Research Award for outstanding graduate research, and the Society of Plastics Industry Design Award. He also won the first Jagdish Bose National Science Talent Search Award in India, an honor modeled after the Intel Awards popular in the United States.

He has authored many journal papers and reports covering a wide range of topics including composite materials, flywheels and synchrotron radiation. He has organized forums on engineering novel materials, high energy density and ultrafast sciences, and performance-based design of nuclear energy systems for the University of California.

Dr. Kulkarni’s pride in his adopted home pours through a phone conversation, taking place thousands of miles apart. “The United States is a great country where someone from the outside can come and by working hard can have an impact,” he says. “The United States stands out among many countries in education because of this. It is why the United States continues to be the leader among nations.”

Dr. Puri says his first meeting with his now friend Dr. Kulkarni was “serendipity.” The two met at a National Academy of Engineering banquet in 2007. “I introduced myself as being from Virginia Tech, and Dr. Kulkarni said, ‘Me, too,’” Dr. Puri says with a laugh.

As of press time, Dr. Kulkarni resided in New Delhi, India, with his wife, Madhuri. They have one son, Amrit, a Blacksburg-born lawyer in California, who is married with two children.
Three-time Hokie alumnus Peter Kurzhals has more than 50 years of experience in human spaceflight, ranging in time from the creation of NASA to the early manned missions culminating in the Apollo program and the moon landings, followed by the Space Shuttles, the International Space Station, and the new private space commercialization initiatives.

His life is a long, fascinating journey for a boy with historical roots tied to Nazi-occupied Germany.

Kurzhals was born in Berlin in 1937, when Europe was sinking into what would become World War II. Two years later, his father, an officer in the Luftwaffe, was transferred to Pilsen, Chechoslovakia. His family lived there under continuous bombing until 1945, when his father’s plane was shot down and he was declared missing in action. Soon, the Russian Army started shelling the town, and Kurzhals and his family hitched a ride on a German army convoy leaving for neighboring Austria. They had to walk the last 50 miles to Vienna after their truck broke down. The next day, the Russian lined up all the remaining Germans within Pilsen and shot them. Years later, now in his 70s, Kurzhals simply said of his childhood, “It was rough.”

After the war, Kurzhals returned to school. As his classes had all been suspended during the past few years, he was two years behind in his education. His mother later remarried an American sergeant, and the family moved to Hampton, Va. Kurzhals spoke no English, but did know two phrases, “Yes, sir” and “No sir.” Both were picked up from his interactions with American GIs serving in Europe.

When he was asked by the Hampton High School principal if he was ready to start school, Kurzhals luckily chose the affirmative, “Yes, sir,” and jumped two grades. Despite not speaking English, he could read it, and got A’s on all his written tests, but flunked all the oral questions. He learned quickly. “After a month in class, I was fluent in English,” he said.

During high school, Kurzhals worked three jobs to save money for college, at a bowling alley setting pins, as a lifeguard, and as a gardener at a local hotel. He started college in 1955 at Virginia Tech, his best financial choice, with the intent of becoming a forest ranger. “I had done a lot of hiking, and loved the wilderness,” he said. “I figured I would have a house on a hill and enjoy the outdoors.”

Finances changed his plans. Kurzhals had to co-op, working every other academic quarter to pay for his school expenses. Engineering offered the best opportunities, so he opted for aeronautics, proving to be a fortuitous choice. He landed a job at the National Advisory Committee for Aeronautics (NACA), the precursor of NASA, in Langley, Va. His future was set.

Kurzhals was at NACA when Sputnik was launched in 1957. While the Soviets celebrated, America quickly responded with the Space Task Group under Bob Gilruth, the man who helped lead the formation of NASA and
Intelligence (SETI) Program and the Artificial Intelligence Shuttle. While Kurzhals earned his master’s and doctoral degrees at Virginia Tech, he developed and patented a double-gimbaled Control Moment Gyro (CMG) system to control the attitude of spacecraft with significant cost savings. After a $50 million advance from NASA headquarters to build a prototype system, Kurzhals and his team traveled to the Marshall Space Flight Center (MSFC), in Huntsville, Ala., to sell the system to flight center management for use on the Skylab space station.

At the presentation, Kurzhals was seated at one end of a massive conference table, facing down approximately 50 engineers, managers, and office types from Marshall. Kurzhals, chuckling as he reminisced, said reaction was swift and certain: “The MSFC guys answered back as expected, ‘It will never fly. We don’t think it will work.’ ”

But one voice rang out in support, in broken, accented English. And not from table before him. “This voice came down,” said Kurzhals, laughing heavily as he recalled the story, “from the balcony: ‘I like it. We will build it!’ And it was Wernher von Braun.”

The late Von Braun was the ex-German rocket scientist who, following World War II and his surrender to Allied forces, repatriated to America and helped lay the foundation for the U.S. space program and NASA itself. “If any one man can be credited with putting the United States on the moon first, it is him,” Kurzhals said.

“Von Braun became his mentor, and Peter worked with him for a number of years,” said William Grossman, an adjunct professor at Virginia Tech now living in Berlin and a longtime friend of Kurzhals. The two attended classes together at Virginia Tech and have remained in touch with each other.

Kurzhals recalled one incident during that period when he flew on von Braun’s personal DC-3 for a trip to review NASA’s Skylab systems. Just as the plane was about to take off, von Braun — serving as his own pilot — asked if anyone had ever flown a plane before. Kurzhals told von Braun that he had several flight lessons under his belt. Von Braun invited Kurzhals to sit in the co-pilot’s seat. As the plane was going down the runway, von Braun turned to Kurzhals and said, “Peter, you’ve got it,” and released the controls.

“I took off at such a steep angle that I spilled all the drinks the engineers were drinking in the cabin,” said Kurzhals, again laughing at his own story.

In 1969, Kurzhals was transferred to NASA headquarters as chief of the guidance and control branch, and soon was promoted to director of the electronics division, with a budget of $60 million per year and 500 employees at 10 NASA centers. Here, he managed the successful test of the Space Shuttle Digital Fly By Wire system on an F-8 experimental aircraft, the first flight of an all fly-by-wire system in the world. The technology was later adopted by virtually all commercial and military aircraft, as well as by space craft such as the Space Shuttle.

He also initiated NASA’s Search for Extraterrestrial Intelligence (SETI) Program and the Artificial Intelligence and Robotics Program, which developed the precursors to today’s planetary rovers, such as the Curiosity robot now maneuvering itself around Mars.

From 1979 to 1980, Kurzhals directed NASA’s Space Division, with a $100 million budget and 1,000 employees. From 1981 to 1984, he was assistant director of mission operations at Goddard Space Flight Center, where he managed mission control center upgrades and led the transition to an online information capability to greatly reduce operating costs.

In 1984, Kurzhals went private, first at Booz Allen, where he developed a fully-automated Management Information System, an early version of Microsoft’s Outlook, for NASA. He joined McDonnell Douglas Astronautics Co. in 1985, first as director of utilization and operations and then later as director of subcontracts for the Space Station Freedom project, with a budget of $400 million per year. In 1992, he was promoted to director of Advanced Space Flight Programs, leading research into future human space exploration.

When Boeing purchased McDonnell Douglas in 1995, Kurzhals was named director of Boeing’s product support for the International Space Station, managing a $600 million budget. He also served on the International Astronautical Federation’s Space Station Committee, and on the board of directors of the American Institute of Aeronautics and Astronautics and the National Management Association. He held many executive positions at Boeing on both the International Space Station and the Space Shuttle programs.

By his retirement in 2011, Kurzhals served as director of systems and software for the Boeing’s space exploration division, and had won many awards including AIAA Fellow, and Orange County (California) Engineer of the Year.

Grossman remembered thinking during his own college years when he served in the Corps of Cadets with Kurzhals that he was among potential greatness. “He was a bright kid, it was pretty clear he was going places,” said Grossman. “When he was a graduate student, he began talking about space stations and control of space stations long before he ever got into that at Langley Research Center. I would call him a visionary.”

Kurzhals, for his part, is humble. “When I got into engineering I always looked for challenging jobs that I could enjoy,” he said. He did exactly that and more, now retired and working on side business projects.

Recently, Kurzhals has focused on sharing his leadership experience through several highly acclaimed training tools including the NMA Leadership Evaluation and Development System, or LEADS for short, the Career Counseling Catalog, and the One Stop PD Shop. These programs have helped thousands of people to improve their leadership skills. Kurzhals has also sponsored leadership scholarships at both Virginia Tech and Harvard.

“Just as it was in the beginning of this country’s manned space program,” he said, “America’s future in human space exploration must be driven by leaders and innovators who can turn the dreams of space commercialization into reality, today’s students hold the key to that future.”
When most young men are concerned with obtaining a driver’s license at 16, Lavender took his first computer programming class. And at 18, he was writing programs on a Commodore PC and logging into large mainframe computers to run and test his programs.

His father’s occupation had facilitated relocation to Georgia while Lavender was in high school. Once residency was established, in-state college tuition was a determining factor as he began to contemplate his collegiate career. Lavender attended the University of Georgia, initially as a physics major, but switched to applied mathematics where computer science courses were taught.

B.J. Ball, the former department head, recognized Lavender’s programming talents. “In his math class, I began writing programs in Fortran that would complete my homework assignments for me. I’d enter the math equations and let the program solve the equations. This gave me more time to participate in extracurricular activities,” Lavender laughed.

Ball nominated the programmer, already a Phi Beta Kappa honor society member, for Pi Mu Epsilon Honorary Mathematics Fraternity. Lavender stood out as its only computer science student, and was ridiculed by the pure math majors for using a computer to do math.

In 1983, he completed his bachelor’s in computer science with magna cum laude honors and assembled his first microcomputer using HeathKit, a computer electronics kit. He also taught himself basic data communications protocols and programmed his computer to connect over telephone lines to bulletin boards and dial-up mainframe computers. Telecommunications became his primary interest.

TRW, Inc., an aerospace and systems engineering defense contractor, beckoned Lavender back to the D.C. area, where he began his professional career as an entry-level network software engineer. He and two recent college grads, considered cheap labor, were given “non-critical” work on a research project on ARPANet. Ironically, this was the precursor to today’s global Internet.

He combined his 60-hour work week with his enrollment in evening master’s classes at the Virginia Tech Northern Virginia campus. Frustrated with not having enough time to concentrate on his studies, Lavender resigned from his post with TRW and headed to the Blacksburg campus to pursue a master’s in computer science with a graduate fellowship. Lavender enjoyed the social and outdoor activities Blacksburg had to offer and he also thrived in the academic environment under the direction of Dick Nance, a professor of computer science. He completed his master’s in 1988 and received the department’s Scholarly Graduate Study Award.

Around the same time, Lavender performed research under Dennis Kafura, also a professor of computer science, whose interests in systems and software engineering were analogous with Lavender’s. Kafura became his doctoral advisor. “Being Greg’s Ph.D. mentor meant that I had

Dr. Greg Lavender
Computer Science
Class of 1988 and 1993, MS and Ph.D.

“The university is a marketplace of ideas, but without an economic marketplace one can rarely bring transformational ideas into widespread practice,” said Greg Lavender, describing a key aspect of his career path.

Currently, Lavender is a chief technology officer and managing director at Citigroup, a global cloud computing architecture and technology infrastructure engineering organization. But, for the past 21 years his post-graduate career has ranged from technology startup company entrepreneur, computer science professor and associate department chair, and leader of ground-breaking research and development engineering teams at Silicon Valley technology giants like Sun Microsystems, Oracle, and Cisco Systems.

The international entrepreneur, born into a military family, has roots in southwest Virginia, but has resided in various countries around the world – Panama, Germany, and Finland. His father’s occupation led the family to Washington D.C. for much of his childhood. Today, with his role at Citi, he trades time between London, Singapore, California, and New York.

His multi-tasking mother, a homemaker raising five children, ensured they obtained a high quality education and university degrees. She cultivated his curiosity in history and science through reading and performing experiments. She found time to become a paralegal, retiring from the U.S. Department of Justice. Lavender credits his father’s advice to study science and engineering as significant influences. “From the very beginning, my father saw the value in computers and encouraged me towards that emerging field before most knew computers existed,” reflected Lavender.

Before 10, his father introduced him to his first computer, an IBM mainframe. He took computer programming in high school and became fascinated with learning how computers worked. “I was captivated by the digital logic underlying the machine and the ability of the human mind to control it by imagining ways to write programs,” Lavender said. “From then on I was hooked.”

The Soviet Union’s launch of Sputnik in the late 1950s had surprised the U.S. and the two countries turned space exploration into an area of national competition for political, economic, and military advantage. One of the benefits of the U.S. government’s desire to become the front-runner in science, engineering, and space exploration was the emphasis on rigorous mathematics and science programs in select elementary schools. As a result, Lavender had the privilege to receive a strong math and science education, learning binary arithmetic in the third grade, essential to understanding the digital logic of computers and how a machine executes programs.
lunch with him frequently to keep up with the innovative ideas he was developing and be there to sign the forms at the end. Now, as then, all Greg needs is the space and the opportunity to be creative,” said Kafura of their 25-year relationship.

Due to the reduction of government-sponsored research by the Reagan and Bush administrations, research dollars at the university were not plentiful. Kafura informed Lavender of funding opportunities with Microelectronics & Computer Technology Corp. (MCC), in Austin Texas. Lavender was invited to spend six months at MCC as a visiting researcher in the Networking and Distributed Systems Laboratory where he conducted advanced R&D on concurrent object-oriented virtual machine architectures, network protocols, and distributed systems. He also completed his dissertation while in the spring of 1993, MCC offered him a full-time research position and Lavender spent the next 14 years living in Texas.

From 1994 through 2007, he taught undergraduate and graduate courses and supervised numerous student projects in the department of computer sciences, a top ten-ranked program at the University of Texas at Austin, while working full-time in the computer software industry. Lavender hired a few students to partner in his start-up ventures, as they were eager to apply their knowledge of technology to the real world.

In 1994, Lavender co-founded ISODE, Ltd., a networking software company that pioneered a family of early Internet protocols and servers, implementing protocols that are in use today on the global Internet. He sold the company and almost simultaneously, co-founded and operated as the chief scientist for Critical Angle, Inc., which was acquired by Innosoft International, then by Sun Microsystems in 2000.

From 2000-2004, Lavender split his time between Austin, where he continued to teach and perform research, and Silicon Valley, serving as the senior director of software engineering for Sun Microsystems, leading product development and managing 450 employees in California, France, and India.

In spring 2004, he accepted the full-time position as associate chair for academics in the computer science department in Austin. He juggled long days at the college with research at Sun Microsystems. At the end of 2007, Lavender relocated to Silicon Valley to commercialize his latest research ideas for a second time.

Over the following four years, he returned to Sun Microsystems becoming vice president of operating systems engineering, then to Oracle Corporation following its acquisition of Sun Microsystems, and finally to Cisco Systems as corporate vice president of network software engineering. With his achievements in the corporate and academic realm, Virginia Tech’s computer science department named him its distinguished alumnus in 2010.

Lavender’s life isn’t all about his professional career. His stepdaughter Lea obtained her bachelor’s degree at the University of Texas at Austin with honors and has a Harvard law degree, practicing in Austin, Texas. His stepson Cary is studying aquatic biology at the University of California at Santa Barbara with ambitions to attend graduate school.

When the entrepreneur isn’t globetrotting or researching, he is cycling, his stress-relieving hobby.

Despite his professional responsibilities at Citigroup, Lavender is still a research computer scientist at heart. His most recent “vacation” was a trip to the UK where he is collaborating on a paper with Dr. Oege de Moor, professor of computer science at the University of Oxford.

“Greg is truly a Renaissance man of computing. He has led teams of hundreds of people - often transforming dysfunction into productivity. He has an amazing grasp of computing technology matched by a deep interest in the principles, theory, and history of computing. I don’t know of anyone else who worked Silicon Valley hours as a technology leader and relaxed by reading books on category theory,” said Kafura fondly.
Joseph R. Loring
B.S. 1947
Chairman and CEO, LORING

Joseph R. Loring's work appears all over the world. His trademark is on the New York's World Trade Center, the Federal Parliament House atop Capital Hill in the city of Canberra, Australia, and the U.S. Supreme Court Building in Washington, D.C. Since Mr. Loring started his private practice in 1956, Joseph R. Loring & Associates, Inc., has provided essential engineering services for many of the great public and private building projects of our time. They range from high-rise office towers and corporate headquarters to universities and libraries, hospitals, airport terminals, courthouses, and correctional facilities. After only six years in business, Mr. Loring was selected as the electrical engineer to design the electrical systems for the twin 110-story towers comprising the World Trade Center in New York — then the world's tallest building. Ever since, his company has been labeled a pioneer in introducing efficient, reliable, environment-friendly building systems.

His success in the global market illustrates his expertise and experience. As an example, Mr. Loring teamed with Mitchell/Giurgola and Thorp Architects in 1980, and they won an international design competition that Newsweek Magazine later called "The Architectural Commission of the Century." That project was the design of the new Federal Parliament House atop Capital Hill in the city of Canberra, Australia.

Most recently, Mr. Loring's Washington, D.C. office is in the schematic design stage for the renovation of all mechanical and electrical systems of the U.S. Supreme Court Building. This ambitious project requires that work be completed while the building is occupied and in use as usual. Mr. Loring describes this complex project to be one of the most challenging of his career that spans six different decades.

Other credits to Mr. Loring's business prowess include: One Post Office Square, Boston, Mass.; and the new headquarters buildings for the International Finance Corporation and the American Red Cross, both located in Washington, D.C. His company has been retained to begin work on a project the Dallas Morning News labeled "The World's Tallest Building." to be located on a site outside of Dallas, Texas. The proposed project is sponsored by the Maharishi Global Development Fund of New York. Other international projects include: the U.S. Embassy, Caracas, Venezuela; Hyundai-Xiwang Building, Dalian, China; Latvian National Library, Riga, Latvia; and the King Fahd Airport, Dhahran, Saudi Arabia.

Since 1995, the firm has been known as LORING. The main office remains in New York with more than 100 employees. Other LORING locations are in Washington, D.C., Princeton, N.J., and Albany, N.Y. The company has received a number of awards, including the 1999 American Consulting Engineers Council's Grand Prize in the transportation category. The award was for the design of the mechanical and electrical systems for Terminal One at JFK International Airport, the first new terminal built at JFK in 35 years.

Three years ago, Mr. Loring and his wife, Sheila Johnston, relocated to Arlington, Va., and he now spends most of his time in the Washington, D.C. office. He has two daughters, Lisa and Debra, and five granddaughters, Maren, Andrea, Alison, Melissa, and Bari.

At Virginia Tech, Joe and Sheila are members of the University's Ut Prosim Society. He has served on the Bradley Department of Electrical and Computer Engineering's Advisory Board and on the College of Engineering's Advisory Board. He is also a member of the College's Committee of 100, the Advisory Board of the National Institute of Building Sciences, and a life member of the Institute of Electrical and Electronic Engineers. In 1999, Mr. Loring was inducted into the Bradley Department of Electrical Engineering's Academy of Distinguished Alumni. He funded a scholarship under his company's name that is awarded to a Virginia Tech student on an annual basis.

Mr. Loring's close ties with Virginia Tech came about in an unusual way. A native of New York where he attended Boys High School in Brooklyn, Mr. Loring had not planned on coming to Blacksburg. In 1944, he enlisted in the Army Reserve. He was given a test, and due to his high grades, the Army "escorted" him to Virginia Tech to study engineering for 12 months. Afterwards, he was assigned to work on a top secret voice scrambling installation in the Pentagon during the remainder of World War II. He rose to the rank of staff sergeant, and after the war, he returned to Virginia Tech to complete his degree in electrical engineering in December of 1947.
At any given time, the chemical company DuPont has some 10 to 15 DuPont Fellows, a very elite corps when one considers the company employs some 60,000 people worldwide.

For four years, from 2004 until his retirement in 2008, Larry Marshall was one of those recognized few for his technical achievements. For him, his accolade of Fellow was awarded because he had a track record of inventions — he holds 14 patents. His work generated huge profits for his company, and he maintained a strong history of working with people.

Mr. Marshall, who grew up in Pulaski, Va., the son of two hard-working parents who never attained a high school diploma, was a key expert in the commercialization of DuPont's Tyvek technology, as well as some 20 other key innovations.

The first person in his family to attend and graduate from college, Mr. Marshall was encouraged by his parents to get the sheepskin. “We were poor in terms of infrastructure, but rich in experience,” he says today. He spent his boyhood summer days on his uncle’s farm in Leesburg where he labored as a field hand, working 10 hours a day, six days a week. But one of the perks was his uncle handed him the keys to a 1958 Chevy truck, and he taught himself how to drive, using the farm’s fields.

So when it came time to commute from Pulaski to Blacksburg for four years, since he couldn’t afford room and board at Virginia Tech, it was an easy decision. He was actually able to join a group of Pulaski Hokies who formed a corporation and bought a bus. For his share of $3 a week, he traveled daily more than 50 miles to and from the campus to study engineering. For its part, the University provided the commuters with a room in Squires Student Center that they could use between classes, as their bus arrived daily before 8 a.m. and never left until after 5 p.m.

His expenses in those days, other than the bus fair, amounted to $90 a quarter or $270 a year to attend Virginia Tech between 1962 and 1966. So for a little over $1000 in academic fees, he earned his bachelor's degree in aerospace engineering, a subject he selected because of his boyhood interest in the burgeoning space program that was intent on putting a man on the moon by the end of that decade.

As a commuter student, the young adult had no time for extracurricular activities, but he did manage to meet his future wife, Jo Ann, a Radford University student, on a blind date during his sophomore year. They married the Saturday following his graduation, and on Monday he reported to his new job at Boeing in Huntsville, Ala. Working with this aerospace giant had been his goal, mainly because he was infatuated with its production of the first stage of the Saturn V rocket, used by NASA’s Apollo and Skylab programs from 1967 until 1973.

Working on the space program also provided Mr. Marshall, who had been classified 1A for the military draft
during the height of the Vietnam War, with a deferment. At that time in the 1960s, the nation considered working on the space program as a bona fide reason not to draft a young man.

A critical and unexpected problem for him was he found the position with Boeing boring. “My job was to maintain the design documentation, and I was disappointed,” he recalls. Also, as the Apollo moon launch of 1969 grew closer, he noticed Boeing was laying off its cadre of engineers. “When I first arrived, there were some 5000 employees as we ramped up. Boeing was down to some 800 by 1968.”

So he dropped back to 30 hours a week at Boeing, and enrolled in graduate school at the University of Alabama at Huntsville where he spent an additional 20 hours each week. He received his master’s in fluids and thermal sciences in 1970, but although he found the space program “electrifying in its intensity,” he made a tough career decision to leave this branch of engineering behind. Subsequently, he returned to Virginia Tech where he started his doctoral program as a teaching assistant in engineering science and mechanics.

With Jo Ann and their twins now in tow, he felt the pressure to get his doctorate finished, but he had a few snags. He flunked an oral exam covering dynamics, fluid mechanics, and solid mechanics by one point, ruining his classroom role. Fortuitously, Dan Frederick, then the department head, offered him a fellowship that he immediately accepted.

Mr. Marshall’s adviser was Dean Mook, a professor who worked closely with Ali Nayfeh, both of whom were extremely accomplished in their fields. Nayeh asked him to perform an experiment, and when he produced an unexpected result that seemed impossible, Nayeh politely asked him to reprogram the equations and get “it right the next time.” The obedient doctoral candidate followed the professor’s instructions, except he still finished with the same unbelievable result. This time, everyone took notice, and the pivotal work led to Dr. Marshall’s Ph.D. dissertation, and into more than 30 years of successful research into nonlinear ship motions by Nayfeh and Mook, among others.

Dr. Marshall recounts that experience in a book he authored in 2010, called “Creativity and Successful Innovation.” Appropriately, he calls the chapter, “Learning from ideas that do not work.”

As he was finishing his dissertation, a number of job offers came to him. He went on an interview with DuPont, and was impressed by the level of talent it was employing. “They had a heavy hitting group with Ph.D.s from Stanford, Princeton, and Carnegie Mellon, and so I decided to accept their offer,” Dr. Marshall says. His family moved to Richmond, Va., in 1974 where DuPont maintained a key facility, and the Marshalls still reside today in nearby Chesterfield.

In the early days, he suffered some more disillusionment, similar to his initial experience with Boeing. “Moving from a high-level academic experience to the world of reality, I was just not prepared. I almost resigned but with two kids,” that was an impracticality, Dr. Marshall admits. So in his off-hours, he would work on his own experiments, running tests, and learning more about science and technology. He developed some side projects. In the large corporation, he also found that he was working in a somewhat formal, top-down management culture in the beginning. But as he learned more about the products than the management knew, he landed in a better tactical position in the company.

The DuPont executives soon called upon him to see how fast he might be able to produce its product called Tyvek. Dr. Marshall figured out how to scale up the process, and reveals that since 1983 DuPont has been using his process.

The engineer also experienced a culture change at DuPont in the 1980s when he says employees became valued for their creativity. Dr. Marshall says the shift turned his attitude around, and he now felt like he was in one of the best jobs in the country.

After 34 years with the company, Dr. Marshall took his retirement in 2008, and started his own consulting business. But his timing was definitely ill-planned as the U.S. was entering into its prolonged recession, the worst since the Great Depression. “Everyone was hunkering down. All corporations got much tighter,” he recalls. But serendipity intervened, and Dr. Marshall soon teamed with venture capitalists interested in nanotechnology. With their support he soon started Verdex Technologies of Richmond, Va., and now serves as its chief executive officer.

“Our work is all green. We do not use any solvents. Our fibers are biologically compatible, and we are now experimenting with putting nanoparticles into our fibers,” Dr. Marshall explains. “We have some ideas we are exploring with agricultural applications and we are also looking at some tissue engineering work.”

The Hokie has felt the stress of turning into an entrepreneur in his 60s, but he also notes “there is real excitement. I do have a degree of freedom with my pension from DuPont.” And this time as his creativity explodes, a percentage of the profit will come back to him, unlike working for the corporation. “DuPont treated me well, but I never participated in the wealth generated,” Dr. Marshall says. This time it will be different.”

With Verdex, Dr. Marshall is also hoping to team with some faculty members at Virginia Tech. “I have a strong allegiance to Virginia Tech. If I had not been able to come to school here, I wouldn’t have had the life I led. Virginia Tech gave me the opportunity,” he reflects.

He has already given back to the University many times over, starting the Richmond office of DuPont’s co-op program with Virginia Tech in the 1980s. He helped found the advisory board for the department of engineering science and mechanics. He also served on the College of Engineering’s Advisory Board, and worked specifically on its marketing committee. Among his many contributions was his personal effort around the turn of this century to help improve the recruitment and graduation of Ph.D.s in Virginia Tech’s College of Engineering.

The Marshalls are long-term members of the Committee of 100 of the College of Engineering. Their two children, Shelly and John, also graduated from Virginia Tech.
When Harold Martin was the newly appointed Chancellor of Winston-Salem State University (WSSU) in 2000, no one appeared to be a stranger to him. He knew the waiters by name at the local restaurant. His gnarly-looking mechanic retained his own key to Martin’s car. When the Chancellor motored slowly around campus, he was recognized by most of the drivers of the oncoming vehicles and they exchanged waves. He was never too engrossed in his own world to miss saying “Hello” to the janitor or to a faculty member.

Martin’s colleagues in higher education describe the charismatic man as a taskmaster who will do anything to get a job done. They consider him to be an excellent listener, often quiet, but always well prepared with a depth of reasoning. They also recognize him to be a politically savvy individual and one who has contributed greatly to the university system in North Carolina.

This combination of charm, know-how, and hard work helps to account for Martin’s reaching the position today of senior vice president for academic affairs for the 16 institutions of higher education, as well as the N.C. School of Science and Mathematics, the nation’s first public residential high school for gifted students, that comprise the University of North Carolina system. In 1971, N.C. ’s Higher Education Reorganization Act placed these state institutions of higher education under one governing board to foster the development of a well-planned and coordinated system of higher education, to improve the quality of education, to extend its benefits, and to encourage an economical use of the state’s resources. The N.C. School of Science and Mathematics was moved under the umbrella of the U.N.C. System in July 2007.

Among his new duties, Martin leads the development and implementation of the academic mission of the University system, including teaching, research, international programs, and student affairs. He advises the president and provides leadership for the president’s council. Martin advises the board of governors on academic affairs issues of university-wide importance; leads strategic academic planning and the implementation of resulting policies affecting the system; works closely with campus chancellors and chief academic officers on university-wide academic initiatives; works to maintain the focus of the missions of the campuses, and implements the academic portion of the long-range plan.

Martin started his career in 1980 in the traditional role as an assistant professor in the field of electrical engineering (EE) at North Carolina A&T State University. He leapfrogged to tenure status in an amazing four years. Martin’s dossier from the early 1980s shows that as an assistant professor he brought in an exceptionally high $500,000 to $750,000 in research contracts and grants annually to A&T. His work was in the areas of high-speed computing, integrated circuits, and fault tolerance systems.

“At North Carolina A&T, we were not playing at the same
level of competition I was used to at Virginia Tech, where I was an instructor for a year while I was earning my doctorate,” Martin explains. The teaching position at Virginia Tech allowed the young Ph.D. candidate to participate in faculty meetings. “I learned about faculty politics and the importance of research and publications. I learned that decisions regarding space needs were made on the basis of research.” Consequently, he used this knowledge to his advantage as a promising new A&T faculty member who was on a fast track.

Martin’s reputation began to spread in the North Carolina higher education system. “I recall that the faculty at N.C. State really sought Harold as a research partner. He had distinguished himself at Virginia Tech and he was very active in North Carolina in education,” says Larry Monteith, a former Chancellor of N.C. State. “Harold was at an historically black institution, and A&T had an engineering program that was very important to our region. Harold proved to be an extraordinarily capable leader and he took on an aggressive statewide responsibility in the development of engineering graduate programs.”

Martin’s real opportunity to excel in an administrative role occurred when circumstances in 1984 allowed him to become the EE department head. The incredibly rapid move to administration in just four years was a true turning point for the rising star of the A&T faculty. “Many people cautioned me against the change to administration, saying it was too early in my career and might prove to be a mistake. But when people caution, I tend to work harder,” the engineer says.

To develop his management style, he drew upon several people he had regarded as mentors while he was pursuing his doctorate at Virginia Tech. He mentions Gail Gray, his former adviser, who “was unbending in his expectations.” Another mentor was Bill Blackwell, the former EE department head, who made it possible financially for the young graduate student to study at Virginia Tech. Paul Torgersen, the dean of Tech’s College of Engineering at the time, and later the University’s president, and Wayne Clough, Torgersen’s successor as dean and now the president of Georgia Tech, “provided me with a sense of style and a certain confidence. They systematically went about building strong programs.” Martin recalls.

Martin did the same, with one achievement leading to another. Every four or five years, he would successfully compete for a new position at A&T, moving from the department headship into the deanship of the College of Engineering, and ultimately to Vice Chancellor for Academic Affairs at A&T.

One of his accomplishments as dean was the institution of a doctoral program in engineering. At A&T, a number of discussions were held to encourage this effort, but the approval from the U.N.C. Board of Governors “never occurred until Harold moved into the dean’s office,” says his colleague Lonnie Sharpe, who succeeded Martin in this position.

“As vice chancellor at A&T, I realized there were far more things in an institution than engineering. Engineering was the kingpin, and it had to be kept strong, but the rest of the academic areas had to be elevated,” Martin says.

“The rubber meets the road at a University in the academ-
When Ray Martin was walking to a meeting in downtown Richmond in 1999, he took out his cell phone and made a call about engineering needs at Virginia Tech to philanthropist Beverly Dalton, the chair of English Construction Co., of Lynchburg, Va. The impulse act eventually resulted in a $250,000 gift to help build a new geotechnical engineering laboratory at the University, completed two years after his phone call.

Martin wasn’t satisfied with his one conversation. He made several other phone calls that week, and in less than two months, received commitments that — with matching monies — totaled approximately $925,000 for the new facility. In addition to spearheading the fundraising effort, Martin and his wife Carol personally contributed $50,000 to the project.

“I guess he just got tired of hearing us make presentations about the need for money to build our lab,” grins Tom Brandon, a member of the geotechnical engineering faculty.

The adage, “If you want something done, ask a busy person,” definitely applies when you are working with Ray Martin. His mind is often working so fast that his wife says he tells “seven stories before he finishes one.”

Martin’s devotion to Virginia Tech landed him back in yet another volunteer role in 2002 as the co-chair on the Institute for Critical Technology and Applied Science (ICTAS) Task Force, a group that promoted the need for Virginia Tech to create a research institute, patterned after the highly successful Beckman Institute and the Georgia Tech Research Institute. This task force brought a high level of public awareness to the research institute, including gubernatorial and Virginia General Assembly support for three immediate building projects. As Virginia House of Delegates member Joe May once said, “I think Ray had my number on speed dial.”

“As a successful businessman I understand the value of people working together for a common goal. I believe that Virginia Tech’s College of Engineering’s proposal to lead the University in its development of ICTAS will result in an elevation of its critical research that will reverberate throughout the state,” Martin says as a reason why he took on this project.

Martin was not always the overachiever. In fact, in high school, he says his grades were far from stellar. He credits his normally quiet mother for his bachelor’s degree. “My mother decided I was going to college. I replied I wasn’t going. Then she drove me to Bluefield College where I met with the dean. It was a very strict Baptist school at the time, and he told me that they did not allow this, and they did not allow that. There would be no smoking, no drinking, no nothing. Again, I said I wasn’t going,” Martin laughs today.

His mother prevailed and things became more palatable after he met his future wife, Carol, in the college town. He decided to pursue Bluefield’s reciprocal agreement with Virginia Tech, and transferred to the Blacksburg campus his junior
year so that he could remain geographically close to Carol. They married in 1963 after his junior year, and he says his best grades came his senior year in civil engineering while Carol worked as a secretary to the department head.

After graduation he joined B&O Railroad following a childhood fascination with the transportation industry. Trains remains one of Martin’s passions, but he soon found out that working for the industry was not the same as loving trains as a boy. So he decided to return to Virginia Tech after a year to pursue his graduate degree. But he and Carol already had two children in tow, so he needed a paycheck. He taught civil technology at Bluefield State College three days a week, and commuted from Bluefield to graduate school the other three, as Virginia Tech still offered Saturday classes in the late 1960s. He continued this grueling schedule for three years, obtaining his master’s in 1968.

He really had the hang of academics now and made his mother proud as he moved his family to Morgantown, W.Va., where he pursued his doctorate at West Virginia University. Finishing his Ph.D. coursework in two years, he moved to Caldwell, N.J. where he worked as a senior staff engineer for Joseph F. Ward Associates (currently Converse Consultants), a geotechnical firm. “I enjoyed the job and we did a lot of work in downtown New York, but Carol and I wanted to get back closer to home and the great Virginia Tech football team.” Martin, an avid fan, laughs. So on his way back to the South, he defended his dissertation in 1972, and he started work for the northern Maryland-based Schnabel Engineering Associates, a geotechnical firm with about 12 employees, owned by James Schnabel.

Two years later Martin opened the first branch office of Schnabel in Richmond, Va., and was named an associate of the firm. In 1984 he became a principal with Schnabel and led the Richmond office until he became president of the firm in 1988. In 1993 he became the chief executive officer (CEO).

“Jim and I were like oil and water,” Martin recalls. “He is a very conservative Catholic. He was not interested in growing the company. I finally convinced him to let me open the office in Richmond, and then I just kept pushing. We opened 14 offices from New Brunswick, N.J. to Atlanta, Ga., and had 300 employees before I left and it is still growing. I guess I knew just how far I could push.”

“If I see something I want, I’ll do it. I set reasonable goals. For instance, when I was the CEO of Schnabel, I’d project that we would grow at a certain percentage annually, and make sure this was sustainable. We did it through the acquisition of smaller companies. There is not a lot of difference between what I did for Schnabel, what I do with my current consulting business, and what I have done for Virginia Tech. It’s fun. That’s why I get up in the morning.” Martin says.

When Jim Schnabel retired in 2001, Martin added chairman of the board to his CEO title until he left the company the following year at the age of 60. “I retired because I wanted to do something different at 60,” he says. Martin started writing a book on leadership, but then his individual consulting business started to absorb more of his time. Martin’s primary engineering practice today relates to design and rehabilitation of dams and consulting on building foundations. He is now billing upwards of 1,200 hours a year, not exactly a retiree’s schedule.

Among Martin’s numerous geotechnical consulting projects during his career are: the Landlevel Ship Construction Facility at Newport News Shipyard; the James Center Office Buildings, Richmond, Va.; Coors Shenandoah Brewery, Elkton, Va.; the Deep Creek Dam, Yadkinville, N.C.; dam inspections in Brazil; and the geotechnical design of a 242-foot high Clifford Craig Dam in Roanoke County. Most recently he consulted with the Corps of Engineers in New Orleans following Hurricane Katrina, worked on a due diligence study of hydro dams in Peru and on earthquake issues related to an LNG terminal in Sonora, Mexico.

He remains one of the College of Engineering’s most active alumni. He served as chair of its Advisory Board twice and as a member for more than 20 years. He was a member of the Via Department of Civil and Environmental Engineering Advisory Board from 1987 through 1993. In recognition of his service, the College of Engineering presented Martin with the Distinguished Service Award in 1993 and its Distinguished Alumnus Award in 2003. He is also a member of the Ut Prosim Society of Virginia Tech.

A registered professional engineer in nine states and the District of Columbia, Martin is a former president of the Virginia Society of Professional Engineers, which presented him with its Distinguished Service Award in 1982. He has been inducted into Tau Beta Pi and Chi Epsilon and is a member and a Fellow of the American Society of Civil Engineers. He was an adjunct faculty member at the University of Virginia where he taught Foundation Engineering.


Martin has been a member of Duncan Memorial United Methodist Church since 1974 and has been active as Finance Committee Chairman, Administrative Board Chairman and a senior high Sunday school teacher for a number of years. He also has served on numerous citizens committees for the Town of Ashland related to planning and economic development.

Ray and his wife Carol live in Ashland where they own the Henry Clay Inn. They have a son, Tim, who owns a geotechnical firm in Pennsylvania, and two daughters, Ann-Carol who runs the Inn, and Susan, who is also an innkeeper. They have four grandchildren, Nathanael, Mariah, Ryan, and Anna-Laura. They also have an “unofficially” adopted member of their family, Frank Straus.
Joe T. May
Electrical Engineering
Class of 1962, BS

In 1937, the community of Coote’s Store had a population of 39 when it welcomed Joe Turner May into the world as a sixth generation Virginian. Born on his parents’ 300-acre farm on the north end of Rockingham County, Joe humbly entered the world as the oldest son among six siblings.

Amenities in the community were stark. A two-room school house welcomed some three dozen first through seventh grade youngsters each day, but without the luxury of electricity or running water. By the time Joe reached the sixth grade, he would serve as the handyman’s apprentice, helping to install electric wiring in the Orebaugh Grade School. “I guess they were hard pressed for help,” he laughs today.

In fifth grade, his mother was his school teacher, and later when Joe was first elected to public office, she would tell a Washington Post reporter her son “was quite a handful.” He displayed much curiosity early in life, helping his sister Lois with her high school chemistry while he was still in sixth grade, but as he followed her into Broadway High School, he says he “did not distinguish” himself academically.

Consequently, after graduation he enlisted in the Army, and spent three years, all stateside, including a year of electronics school. Afterwards he was assigned to a guided missile outfit in Alabama, giving him an insight into the workings of German-born scientist Wernher von Braun who became an American citizen, and is often considered the premier rocket engineer of the 20th Century. His Army stint also took him to Cape Canaveral, Fla., and these experiences guided Mr. May’s career choice of engineering.

In 1958, he entered Virginia Tech, “one of the turning points of my life,” he says. His poor academic record in high school haunted him and his admittance was “conditional,” but he set out to prove it wasn’t a fluke that he taught his sister chemistry before he was a teenager. To offset expenses, he became a resident counselor in the dormitory, earning some two-thirds of his room, board and tuition of $735 a year. He also served on the University’s Honor Court.

In 1962, he was awarded his degree in electrical engineering, and he was off to a career that would eventually have him labeled as the “Thomas Jefferson of the Virginia General Assembly.”

Companies were hiring in the early 1960s and Mr. May eventually settled in on E.I. duPont de Nemours and Company in Wilmington, Del. The recruiter lured him to the First State, and home of one of the world’s largest chemical companies, by suggesting that he could visit his fiancée, Bobby, while he was interviewing. The recruiter’s premonition was correct, and he stayed for more than six years, earning his first three patents, the best known of which is the instrument
took and passed the Professional Engineer’s Exam for And just to maintain his engineering credentials he conducts business in some 30 countries worldwide. 

tive officer of the 200 plus employee company and Danville, Va. Mr. May continues as the chief execu-
million a year company with additional facilities near for the long-range option, and today they own a $40 
ing EIT a real business or a sideline. The Mays opted within six months, he knew he faced a choice of mak-
chores. Because he had a solid retainer from another client he had intended to be an absentee owner, but within six months, he knew he faced a choice of making EIT a real business or a sideline. The Mays opted for the long-range option, and today they own a $40 million a year company with additional facilities near Danville, Va. Mr. May continues as the chief execu-
during EIT. 

From early on, Mr. May realized the importance of being attentive to the safety of survey teams. He was aware of the limitations of using a string line to measure the curvature of railroad tracks, which remains a standard in the railroad industry. 

The latter patent provided Mr. May with tremendous satisfaction. On what he describes as “a hot miserable July day in Burke, Va.,” when he was part of a survey team running a string line and “perform-
ing thousands of deep knee bends,” he decided there had to be a better way to collect the data. His imagi-
nation resulted in a new measuring instrument that allowed future survey teams to cover some 500 miles of railroad track in a day as opposed to previous two miles per day by string. 

In the back of his mind as he continued knocking on and opening doors, he knew he was headed towards starting his own business. In 1977, Mr. May opened the doors of Electronic Instrumentation and Technology (EIT) located in Sterling, Va. The encour-
agement he needed to found the company came from his acquaintances at DuPont who suggested that if a small company was to grow up in Virginia, the corporate giant would support it. DuPont was interested in Mr. May’s latest electronic designs, a device that was used to measure the air quality in coal mines and a second measurement instrument to monitor exposure to noise in the industrial work place. 

With an $83,000 contract from DuPont, Mr. May, his wife, and a professional friend started EIT on the kitchen table. Reminiscing about the early days, he laughs, saying his wife often had to put the clients on hold to tend to a hot iron, as she alternated the company’s administrative duties with the household chores. Because he had a solid retainer from another client he had intended to be an absentee owner, but within six months, he knew he faced a choice of making EIT a real business or a sideline. The Mays opted for the long-range option, and today they own a $40 million a year company with additional facilities near Danville, Va. Mr. May continues as the chief executive officer of the 200 plus employee company and conducts business in some 30 countries worldwide. And just to maintain his engineering credentials he took and passed the Professional Engineer’s Exam for electrical engineering in 1997. 

In 1993, Mr. May ran his first successful campaign for elected office, joining the Virginia House of Delegates as the representative of Clarke and part of Loudoun Counties. He is currently in his eighth consecutive term, and in most of his re-elections, he has run unopposed. But he is known for going door-to-door, and even competing in the tractor driving events and cow-milking contests at the local fairs. He is the current chair of the House Transportation Committee, the past chair of the House Science and Technology Committee, and retains his membership on it. He is also a member of the House Appropriations Committee and chairs the Joint Commission on Technology and Science (JCOTS). 

Among his legislative accomplishments, Del. May crafted legislation to modernize Virginia’s information technology, making more government services available on the Internet; pioneered the establishment of statewide policies to protect Virginians from identity theft and cyber-crime; co-sponsored educational choice tax credits for Virginia families; amended the law to make certain that Virginia health insurance carriers are required to cover reconstructive surgery for women with breast cancer; and created Virginia’s Rustic Rural Roads Policy. 

In 1996 he was honored as the recipient of Virginia’s “Lifetime Achievement Award in Industry.” In 2000, Mr. May received the Governor’s Legislative Leadership Award in Technology, followed by the Greater Washington Area “Engineer of the Year” award in 2001. In 2002 he was named the Virginia Biotechnology Legislator of the Year. When former Michigan Governor John Engler met Delegate May, he pronounced that the electrical engineer had more patents than anyone in the General Assembly since Thomas Jefferson, lending to his stellar reputation as the resident technology expert in the Virginia General Assembly. Mr. May has 22 patents to his name today and is still filing. 

At Virginia Tech, Delegate May received the 2005 College of Engineering Distinguished Alumnus Award. He and Bobby have endowed a scholarship in electrical and computer engineering. “At Virginia Tech, I learned a great number of the lessons I needed to succeed. I never worked harder, and I competed for grades. In the summers, I interned at Johns Hopkins University Applied Physics Laboratory. I felt competitive with the interns from other schools like Georgia Tech and MIT. Virginia Tech’s engineering program is as good a balance as one can get. It’s pretty darned practical and a true learning experience,” Mr. May reflects. 

The May’s have two daughters, Susan Pedersen and Elaine M. Attridge.
William C. McAllister
B.S. Engineering Mechanics, 1965

“My father always taught me that no one remembers who came in second place,” recalls Bill McAllister, a man whose leadership skills have led to the success of many others. As Bill reflected on his own first 25 years of his career, he choose this opportunity to first speak highly of his dad who started his career on the production line at DuPont. Then, after a stint as a private investigator, he went to work for a bank, repossessing cars. One promotion led to another until, in 1963, his father founded Security National Bank in Roanoke, Va. “My dad pulled himself up by his bootstraps. He had no formal education,” Bill says with obvious pride.

So, in high school, Bill began developing his own legacy. He was secretary of one organization, a treasurer of another. “I was on the fringes of leadership” but still developing his social skills, he says. “For example, I was selected to represent my high school in a public speaking competition. I got a ‘C’ for the style of the presentation, but didn’t place well because of my topic.” That’s easy to understand when he tells you the title of his 12th grade talk: “The Equivalence of Mass and Energy and Its Relationship to Nuclear Binding Forces.”

A high school career preference test directed Bill to the engineering field, and he selected Virginia Tech primarily because it offered him membership in the Corps of Cadets. “I felt the Corps would increase my chances of success,” he says. In fact, “I had a defining moment when I became President of the Cotillion Club and realized leadership was a major turn-on for me.” He offers that he was not as “passionate” a student as he could have been, enjoying his leadership in the Corps, serving on the Regimental Staff as a senior, and the Cotillion Club. He also played guitar and autoharp in an off-campus coffee house. Despite Bill’s critique of himself, he graduated in the top five percent of his class and he was a member of Tau Beta Pi, Phi Kappa Phi, and Omicron Delta Kappa, the premier academic and leadership honorary societies.

As Bill completed his requirements for his engineering mechanics degree in 1965, he looked for opportunities to pursue his love of leadership. He created his own criteria for pursuing a business or management degree: a 12-month turnaround, no thesis, and the school had to provide full tuition. Rensselaer Polytechnic Institute met his needs and in 1966 he graduated with a master’s degree in engineering management.

Similar to his Cotillion Club presidency, Bill recalls another “defining” moment when he was passing through Miami in 1967. He observed all of the fine cars, the expensive hotels, and the wealthy looking people relaxing in the sun. “I wanted to know who these people were who had the time and the money to hang out in a place like Miami. After thinking about it, I concluded that being the owner of your own business could possibly provide those ingredients. So I set out to establish control of my own destiny.” He had this epiphany when he was working in Florida as a management consultant for Boeing on the Apollo project, and just before he spent the next three years as an officer with the Army in Germany to fulfill his military obligation. Upon returning to civilian life, he found the ideal position to prepare for his entrepreneurial role. He spent the next 20 months with The Trane Company as an in-house management consultant. During this time, he worked with engineers who were starting new Trane franchised air conditioning dealerships, training them in basics of accounting, finance, etc. With the knowledge he gained personally, and with a line of credit provided to him by Trane, Bill founded Colonial Mechanical Corporation in Richmond, Va., in 1972.

“Starting my own business was a whole lot harder than I imagined. After 90 days of frustration of trying to estimate and sell work while still managing the field employees, I ran a three-state ad campaign, and brought in a field superintendent at twice my own salary. I told him I never wanted to have to go out in the field again,” Bill reveals. “Bill Mallory became my first vice president and was a key person who helped me.” Over the next 25 years, the company grew to employ almost 800 people and ranked 42nd in size among mechanical contractors in the entire U.S.

When Bill planned his own exit strategy from the company, he knew he wanted to reward the loyalty of his employees who had worked so hard for him. He managed to attract a lucrative offer for the business that would create wealth for his immediate partners as well as himself. They became multi-millionaires, and Bill earned his freedom in 1999 at the early age of 55.

As the talent and experience levels of Bill’s management team increased, he increased his philanthropic activities exponentially. “I was influenced by Bill Daughtrey, another Virginia Tech alumnus, who changed my thinking about giving levels, and the next thing I knew I was pledging $50,000 to the University. This was a new dimension in giving for me,” he says. “I also started making large donations to other charities, but Virginia Tech had a special place in my heart. I later merged that first $50,000 with a half a million-dollar donation to create the McAllister Leadership Scholarship in the College of Engineering. I also gave another $50,000 to establish the McAllister Emerging Leadership Scholarship in the Corps of Cadets.” Each year Bill meets with the recipients of these scholarships, now numbering 48, and stays in contact with many of the graduates.

He recently raised another $50,000 for a Corps scholarship from over 100 members of the Class of 1965, and he is the founding President of the new Cotillion Club Alumni Association. He is a member of the College’s Committee of 100 and is a Distinguished Benefactor in the Ut Prosim Society. In Richmond, Bill serves as a Trustee of the Children’s Hospital and is Chairman of the Finance Committee. He is also President of his community in North Carolina.

His wife Rennie shares in Bill’s commitments to charities. Bill has high praise for his spouse, saying, “Rennie is very passionate about children’s causes and has raised hundreds of thousands of dollars for the Make-A-Wish Foundation.” She has been on the Make-A-Wish Board of Directors for eight years, and has held numerous leadership positions there. In 2002 Rennie was given a Volunteer Achievement Award at the 75th anniversary celebration of the Richmond’s Junior League. Rennie is a graduate of the Medical College of Virginia with a degree in nursing, but she spent her first two years of education in a pre-nursing program at Virginia Tech. Her career included the nursing management of the Pediatric Emergency Room at MCV Hospital where she worked for 11 years before joining Colonial Mechanical to organize its human resources function. She stopped working full time in 1995. Together, Bill and Rennie share a passionate interest in travel, boating, and sportfishing. They spent four recent winters in Mexico living on their boat and taking friends sailfishing. As a thank-you for the McAllisters’ hospitality in Mexico, their friends have contributed over $30,000 to the Make-A-Wish Foundation.

Bill has three sons from a former marriage. Drew is a First Lieutenant in the Marine Corps who served two tours in Iraq and remains on active duty. Brian just completed his military service as an Army Captain. He served two tours in the Middle East, one in Afghanistan and one in Iraq, both in a Black Hawk helicopter brigade of the 82nd Airborne. Michael is a residential carpentry subcontractor in the Outer Banks of North Carolina.
**Samuel H. McGhee III**

**B.S., Civil Engineering, 1963**

When Sam McGhee was six years old, he knew he wanted to be a civil engineer (CE). As an impressionable youngster, he had listened to his mother proudly speak about the accomplishments of her brother, a CE. Sam’s uncle had assisted in the construction of the Tower of Learning at the University of Pittsburgh and helped build the Pennsylvania Turnpike.

The excitement he felt about building things as a young boy never left him, and today he can revel in his own accomplishments. Among them, he helped guide the consulting engineering firm of Mattern and Craig from a small operation of a half a dozen employees to a staff of more than 100 with offices in five locations in addition to his home base of Roanoke, Va. His own repertoire of projects includes Roanoke’s largest water treatment facility, housing projects, and highway interchanges.

Born in Washington, D.C., Mr. McGhee has spent his entire career in the Commonwealth. After graduating from Groveton High School in Fairfax County, Va., he started a two year pre-engineering curriculum at William and Mary. As a junior he transferred to Virginia Tech. He excelled in the CE curriculum, earning membership in two honorary societies: Chi Epsilon and Tau Beta Pi. He was also active in the American Society of Civil Engineers and in the American Road Builders Association. He received his Hokie degree in 1963.

His first job as Assistant Town Engineer for Front Royal, Va., taught him that politics plays an enormous role in a civil engineer’s life. Attendance at town council meetings became a requirement of his job as he worked with the citizens and the town personnel on everything from storm drainage concerns to street resurfacing. “I had no idea of the political requirements to my profession, but fortunately, I enjoy working with people,” reflects Mr. McGhee.

His next stop was Martinsville, Va., where he served as Chief of the city’s engineering division. But it wasn’t long before he packed his family’s bags and moved everyone to Roanoke, Va. in 1969. He accepted the position of City Engineer and later became the Assistant City Manager. He became active in the community, earning the Outstanding Young Man of the Year award in 1973 from the Roanoke Jaycees. The Roanoke City Council presented him with a key to the city in 1981. He also served for a number of years on the board and as President of Roanoke’s Festival in the Park.

With a number of accolades now behind him, Mr. McGhee decided to leave the public sector in 1981 and join Mattern and Craig of Roanoke, Va., where he would spend the rest of his professional career. Starting as a project and marketing manager, he assisted a number of small communities in the upgrading of their standard facilities. Later, he worked on Roanoke’s Carvin’s Cove Water Treatment Plant, as well as one of the entrances to the Valley View Shopping Center. The company’s growth was “staggering,” says Mr. McGhee, and it came as a result “of changes in state procurement laws, and our firm was chosen for a number of jobs based on our qualifications.”

A stroke in 1997 brought about Mr. McGhee’s early retirement as company President. But, as he reflects, “I have enjoyed my retirement, even in a wheelchair.” He remains active, serving on two boards that help the physically disabled: the Blue Ridge Independent Living Center and the Foundation for Rehabilitative Equipment and Endowment. Both are located in Roanoke. He first learned philanthropy from another mentor, his father, who worked for the American Red Cross. “Philanthropy has always been important to me.”

Mr. McGhee has made numerous contributions to Virginia Tech. He has served on Virginia Tech’s Presidential Advisory Board, the College of Engineering’s Executive Committee during the Capital Campaign of the 1990s, and as a member and as Chair of the Via Department of Civil and Environmental Engineering Advisory Board. He also is a member of the University’s Ut Prosim Society and the Legacy Society. He remains an active member of the Second Presbyterian Church of Roanoke, where he is a member of the College of Elders.

“I decided to make Roanoke my permanent home because it was a nice place to raise our children,” Mr. McGhee says. He and his wife Sara have four children, three of whom followed Dad’s footsteps and graduated as Hokies. He jokingly adds that his fourth child, Will, “sadly” did not attend Virginia Tech — but he did graduate from Georgetown University and is now a major in the U.S. Army.
Art W. McKinney
Architectural Engineering
Class of 1965, BS

The last time Elvis Presley left a concert building, he walked through exit doors put there by Art McKinney. McKinney – Virginia Tech Class of 1965, former employee of J. Robert Carlton and Associates in Richmond, and now owner of full-service design and construction firm McKinney & Company -- once quipped about his career, “We did do some gee-whiz engineering and have built some really cool stuff.”

And how. If it were not for Mr. McKinney, Presley’s final concert could have played out differently. The famous performance was held at Market Square Arena -- a project overseen by a young McKinney -- in Indianapolis. The date was June 26, 1977, and 18,000 fans watched the King of Rock and Roll blow through a 20-song set. Three months later, Presley was dead. Other Market Square claims to fame: The Pacers played there for roughly 25 years. The Ice whacked pucks there for years, in part due to a pitch by Mr. McKinney, who talked up the facilities capabilities. Rock band Motley Crue filmed a music video there in the 1980s.

Market Square remains a cornerstone project for Mr. McKinney: 21,000 seats with a 364-foot-diameter dome designed and built in the early 1970s. Problems were many: politicians fought over the location, and the selected site was a tight fit. In the end, the project covered two city blocks with the event floor spanning Market Street. “We brought it in on time, and on budget using fast track, phased construction,” Mr. McKinney says.

Then in 2001, “They blew it up.” They being Indianapolis. Only a marker highlighting Presley’s final stage appearance remains. Classmates and friends from Virginia Tech sometimes drag out the implosion video as a joke of sorts. “You know you are getting old when one of your premiere projects got blown up,” Mr. McKinney says.

He started his own company 30 years ago. A project of his company’s is regularly showcased on television: The Insurance Institute for Highway Safety’s Vehicle Research Center. (You’ve seen it in a thousand vehicle safety commercials.) The facility’s unique requirements for full-scale vehicle crash testing provided an opportunity to start from the basic physics of fully inelastic impacts and move to a practical engineering solution. The test bed realized has significantly contributed to vehicle safety, said Mr. McKinney.

Then roughly 15 years ago, Mr. McKinney pushed his business out of big box manufacturing, warehouses and distribution centers and such, into complex critical facilities, clean room manufacturing, data centers and the life sciences. The new path started when Mr. McKinney’s company began designing and building
clean room facilities for Technicolor, a company best known as a Hollywood film developer. “Clean” lead to “containment,” the businessman says.

Now working internationally, Mr. McKinney’s work involves stringent containment standards for biologic and chemical risks. These facilities have various bio-safety levels, from Level 1 (might make you sick) to 3 (tuberculosis) to 4 (breakout the plastic suits from “E.T.”). Mr. McKinney currently is commissioning his first level 4 facility. There are only five or so in the entire country. Requirements are strict and unique – the ability to flood the room with vaporized hydrogen peroxide, for example. One of the company’s more recent BSL-3 projects is the $63 million Division of Forensic Science, Office of the Chief Medical Examiner, in Prince William County, Va., completed in 2009.

With an office in Panama since 2001, Mr. McKinney has completed a series of projects combining manufacturing with the life sciences. The work involves programs to control insects such as med flies, and to eradicate parasites such as screw worms. Sterile Insect Technique, the mass rearing, sterilization and release of such insects saves the citrus and cattle industries billions of dollars,” Mr. McKinney says.

Taking on such needed and tough-to-realize projects is a specialized service, but challenges don’t bother Mr. McKinney. “Don’t let artificial boundaries set by yourself or other people limit what you can do,” he says, recalling part of a commencement speech he gave Virginia Tech engineering students in 2009. “You should be defined by your character. There is no box.”

Mr. McKinney was born in Florida during World War II. Before he was a full month old, his father – a pilot and instructor for the U.S. Air Force – moved the family to South Carolina and then Georgia. He saw many moves before finishing high school in Virginia. When he arrived at Virginia Tech in 1961, he was set on being an architect. Soon, though, structural engineering drew his interest. “It worked out well,” Mr. McKinney says.

Four years in the Corps helped improve his attention span, Mr. McKinney says. An interesting note, several years ago Don Garst, one of his structural professors commented, “For two years, Art was the Honor System,” an off-hand, but quite appreciated remark, Mr. McKinney says.

He is now a Fellow of the American Council of Engineering Companies, serves on four technical committees, and as an instructor for the American Concrete Institute. He is a member of the American Cancer Institute Board, South Atlantic Division. He is an avid supporter of Virginia Tech. He is a distinguished instructor at the university’s Division of Continuing Education and Public Service Program. He served six years on the Civil and Environmental Engineering Alumni’s Board, and was inducted into Chi Epsilon in 2009. He now serves on the college’s Committee of 100 and is a past member and chair of the college’s Advisory Board. He was named the Distinguished Engineering Alumnus of 2009.

He also regularly keeps in touch and attends reunions with his classmates – lifelong friends he made in the Corps of Cadets. “When you got to Virginia Tech, you set down some very serious roots. If you didn’t, you missed an important fork in the road,” he says. His class had its 45th year reunion in October 2010. “Of the 43 people starting in 1961, E Company, 19 of us graduated, we lost one in Vietnam, and we have lost two to health problems. Thirteen of us were at that reunion.” Plans are underway for the 50th anniversary. “The plan is to be there, more importantly to still be here,” jokes Mr. McKinney.

Mr. McKinney’s Hokie love spilled over to his children. Daughter Christine graduated in 1988 with a degree in geophysics. Son Art graduated in 1990 with a degree in history. The lineage may not stop there. His 9-year-old granddaughter loves visiting campus during football season. “She is already Blacksburg bound,” Mr. McKinney predicts.
Dr. Joseph Meredith, Jr.
Aerospace Engineering, Class of 1969, BS Industrial and Systems Engineering
Class of 1997, Ph.D.

“Community – our goal for the Virginia Tech Corporate Research Center (VTCRC),” as President Joe Meredith said, “is something that can and must be continuously cultivated.”

So Meredith arranges for events such as networking socials, pumpkin carving contests, and recreational sports leagues to bring people together – to make intellectual, introverted scientific employees share what they do in an open atmosphere. The end results are more business opportunities and satisfied employees, said the dedicated entrepreneur.

Meredith grew up on a farm in a rural Richmond community with the closest child to play with more than a mile from his house. As an only child, born to a bricklayer and a housewife, he was never treated like one, Meredith recalled. The expectation that young Meredith would attend college was steadfast and firm – his father saw to it. The senior had made it perfectly clear that his son would not follow in his footsteps.

During blistering hot summers, his father gave him the difficult job of working with bricklayers. It was the genius behind his father’s desire to have him go to college and hopefully have a much better life. At each week’s end, his father would hand him a small pay envelope. “I think he wanted to make me so miserable, I would beg to go to college,” Meredith recalled.

His skillful father was also a hunter who traded piano lessons in exchange for killing ground hogs on the piano teacher’s farm, so young Meredith could learn to play. “This began my exposure to music, which to this day is a large part of my life thanks to my father’s foresight into my future,” Meredith noted.

By 10, he developed another fascination – this time with flying after watching a neighbor build an airplane from scratch. Meredith was fortunate to have an uncle with connections to Goodyear who subsequently secured a flight for him on its infamous blimp. “From then on I knew I wanted to fly – that was my goal,” said Meredith.

Professionally he knew he wanted to be an engineer. “I was pretty good at math and very bad at English,” smiled Meredith. “So, my teachers assumed I had to be an engineer.” By eighth grade he was learning mathematics at an accelerated pace allowing him to take advanced placement classes.

At Varina High School, his basketball coach was also his math teacher. “I played basketball and I wanted to be like him so I tried even harder in his math class.” Meredith became one of a small percentage of his graduating high school class to go on to college.

“My father loved Virginia Tech without reason it seemed,” said Meredith, shaking his head. The senior Meredith had been a cadet at John Marshall High School and later accepted to West Point. However, fate forced him to go to work in order to pay for his younger brother’s schooling. That scenario would not happen to his son and much to his father’s delight, Meredith became first generation to attend college at Virginia Tech in the fall of 1965. He enrolled in the aerospace program to better understand flight.

“I loved Virginia Tech. I fell in love with the rolling hills, the challenge of academia, and being a part of making innovative ideas come to life,” said Meredith.

Upon graduation he went on to pursue his master’s degree in aeronautics, astronautics, and engineering science at Purdue, the home to many astronauts. Meredith was drafted, but he was able to defer joining the service until he graduated. Then he entered the Air Force Officer Training School, where he later failed his flight physical due to allergies, crushing his dreams of flying the blue skies. He sadly returned to Richmond with a shaved head and no prospects. When Newport News Shipbuilding called, Meredith jumped at the chance for an interview. He was hired as a research engineer in fluid mechanics. His computer skills led him to become a computer systems department head.

Meredith’s impressive leadership skills soon earned him a spot in a general management development program. Subsequently, Meredith was promoted to proposal and marketing manager with responsibility for over $1 billion of proposals on cruisers, destroyers, and the reactivation of a battleship. He was also engaged in various entrepreneurial projects.

In 1983, Meredith was one of a handful of corporate executives to be accepted to the Defense Systems Management College (DSMC). Graduation from DSMC was a requirement to become a program manager of a major weapon system. The program was similar to getting an MBA, which proved instrumental in developing Meredith’s business knowledge.

In 1988, Meredith relocated to Washington D.C. to manage the shipyard’s engineering office. The office was responsible for the engineering work that the Navy wanted done locally. In 1991, Meredith was back in Newport News managing some 400 employees in the Integrated Logistics Support Department, which provided products and services related to the life cycle of a ship after construction. After three years, cutbacks in defense spending forced a workforce reduction. After 22 years with the shipyard, Meredith was one of many laid off.

“I was given 33 weeks of severance pay,” said Meredith. “In that timeframe I became an entrepreneur working for IBM, DARPA, and other companies. This period was invaluable in helping me understand the challenges that people face when starting companies.”

At 45, he accepted his dream job in Blacksburg – President of the Virginia Tech Corporate Research Center.
One of his long-term goals, to return to Blacksburg, a town where technology was thriving and new ideas abounded, was finally accomplished. Getting there had seemed unattainable, as Meredith had applied for several jobs at Virginia Tech throughout the 70’s, 80’s, and 90’s.

“Over a long career I have had the privilege of attempting to attract a good number of individuals into various positions at Virginia Tech. Joe was one such individual,” said Paul Torgersen, former president of the VTCRC and former president of Virginia Tech. Torgersen led the search for the center’s president and found the talented, driven Meredith to assume the position.

“I felt truly happy for the first time in a very long while,” said Meredith. “I told my wife and my three daughters that we were finally moving to Blacksburg. They couldn’t believe it after trying for so long.”

Today, the 230-acre park is home to over 150 research, technology and support companies due to Meredith’s vision. Expansions on the northwest side of the park provide enough land to construct 19 buildings in addition to the current 29 single- and multi-tenant buildings. The mission of the center, in collaboration with the university, is to advance research, education, and technology.

At the for-profit, wholly-owned, private subsidiary of the Virginia Tech Foundation, the CEO and president explained he is continuously looking for good science and exceptional people who can execute their dreams. The biggest challenge, he said, is raising money to support good scientific ideas given the possible chance of failure.

Today, the VTCRC is a successful community of over 2,700 employees and growing.

In 2008, the NewVA Corridor Technology Council presented him with the NewVA Leadership award. The award recognized one who “not only succeeds in the workplace, but also leads by example by contributing significantly to the community in which we live,” according to a statement by the council. Meredith has numerous accolades, including the 2011 Professional Leadership Award from the Christiansburg-Blacksburg Rotary Club and the 2001 Business Person of the Year Award from the Blacksburg Regional Chamber of Commerce.

Because of Meredith’s innovative ideas with the VTCRC and ability to make his visions become reality, the Association of University Research Parks (AURP) honored the VTCRC with its “Outstanding International Research Park” award in 2010.

“I can think of no one who exceeded my expectations more than Dr. Meredith. He has done an outstanding job,” said Torgersen, a National Academy of Engineering member.

Meredith began another educational pursuit in 1997, returning to the classroom as a student. Twenty-seven years after he completed his master’s, Meredith obtained his Ph.D. in industrial and systems engineering from Virginia Tech. “I might have studied too much during my undergraduate years. Not knowing if I could succeed, I kept my nose in the books with little time for fun things,” Meredith reflected. “As a result I wasn’t well-rounded. Returning to the classroom as a student, I was more able to enjoy extra-curricular opportunities.” He has been learning Chinese for the last nine years – just for fun.

The spring of 2014 will be the first in 15 years Meredith will take a step back from teaching Global Issues in Industrial Management in the ISE department. Instead, he is concentrating his time on developing a $250 million research, retail, and residential 100-acre campus in Newport News in a partnership with W.M. Jordon Co. and the Virginia Tech Foundation. The end-goal is to mimic Virginia Tech’s CRC facility and incorporate additional space where people can live, eat, shop, and exercise – creating an integrated community environment.

“I don’t plan to work forever,” Meredith smiled, “but I do intend to stay engaged in entrepreneurship and community building in Blacksburg. It took me long enough to get here and I’m not leaving.”
Virginia Tech’s legendary engineering professor Bosco Rasche once asked George Middleton, Jr., why he wanted to be a “poor engineer when he could become a good plumber?” Rasche posed the question to Middleton during a class after the young student did not answer two mathematical questions to his professor’s liking.

“It was the ultimate humiliation,” Middleton recalls today. But the successful mechanical engineer whose company now works on unique electrical contractor projects that can range upward in costs to $25 million has more than illustrated his engineering prowess in the 58 years since his bachelor’s degree was awarded.

And he still enters the office of E.G. Middleton, Inc., of Norfolk twice a day at the age of 80 “to upset everyone,” he laughs. Between trips, he goes to the YMCA at lunchtime to exercise, including stomach crunches. “For 35 years, I ran three miles a day; now I ride a stationary bike,” the octogenarian says due to his knee replacement surgery.

At work, he continues to take responsibility to review the company’s charges on each job it performs, and if he sees something he doesn’t like, he sends an employee “a nasty note. They need to know someone cares!” he asserts with his trademark laughter.

In many ways, Middleton is indeed a chip off the old block, as the saying goes. Named after his father who founded the family business in 1920, the junior Middleton started his career at 14 working with a pole line gang, building electrical pole lines. He entered Virginia Tech as a 17-year old freshman in 1944. As soon as his 18th birthday occurred, he enlisted in the U.S. Army to serve in World War II and was sent to Bavaria where he served as a motor sergeant. “Promotions came fast back then,” he chuckles.

After 19 months as a soldier, he returned to finish his engineering education at Virginia Tech, a university where he says he was accepted because he had a high school diploma and $750 to pay the bills. “I was a country boy with 11 years of schooling, all in the same building, and classes at Virginia Tech were totally over my head,” he admits. But when he returned from his stint overseas, he noted that all of the post World War II students were very serious, including himself.

In 1950, despite Rasche’s misgivings, Middleton earned his sheepskin and returned to Tidewater where he remains today. “I tried to grow the business, acting as an electrician by day and an estimator by night. I learned that projects that involved heavy industrial work had limited competition,” and he moved the company in that direction.

“Dad had an impeccable reputation. I don’t think he graduated high school but he was the soul of integrity and that opened a lot of doors for me. I rode his coattails,” Middleton says about the early days when he was expanding E.G. Middleton, Inc. “Dad would be ill at ease at times because some of the jobs were getting so far beyond his comfort level,
and then he would pretend he was just too busy to look at things.” Or his son says he would only allow his father to see “selected parts” of the mail. And again, like father, like son, his dad came into the office until he was 85, just three weeks short of his death.

“Now I am in the same position since my son Rudy is taking jobs I would not have considered,” Middleton admits. Rudy, now president of the company, is the Middleton who has entered the electrical contracting company into $25 million jobs without any of the queasy feelings his father might incur over such high stakes.

The company has evolved to a payroll of 115 to 150 employees but at times, it can be as many as 250, depending on the workload. “We are union. When we need electricians, we cannot just advertise for them in the newspaper,” Middleton explains.

An example of one of his company’s largest and most challenging jobs was acting as a subcontractor for the heavy floating equipment when the Chesapeake Bay Bridge Tunnel was built. “Some of this equipment was never used before, and I would go to engineering conferences to explain what we were doing. I would stay up to 2 a.m. studying to make sure I did not make a fool of myself until I realized no one else knew what was going on. It was a bit awesome,” Middleton acknowledges.

Other large commercial electrical contracting jobs secured by Middleton included facilities for Old Dominion University, a host of area hospitals, Hoochst Celanese, Newport News Shipbuilding, Oceana Naval Air Station, and many, many more.

As his own reputation grew in the Norfolk area, Middleton found himself serving on various boards and volunteer positions. One particularly onerous one was the Norfolk City School Board at the height of integration. Middleton followed Vincent Thomas as the board chair during this particularly intense time. “We had massive bussing. We lost 7,000 of the 54,000 students but we were able to keep the city from erupting in a riot,” Middleton recalls.

“I learned a lot, even with the horrendous problems we had, including my life being threatened,” he adds.

When he left that board in 1977 after eight years, he became chairman of the Sentara Healthcare Board for the next two decades. “They two-yeared me to death until 2000,” Middleton says of his 20-year stay. At the time Sentara was a group of six hospitals, seven nursing homes, and 13,000 employees. “Sentara is normally one of the top ten organizations for integrated health care. Early on, they got away from traditional management and moved to out-patient treatment,” Middleton explains.

He became a speaker for the healthcare system and found himself traveling throughout Virginia, up and down the east coast, and as far west as Iowa and Texas. Among his hundreds of speaking engagements, he spoke to such austere bodies as the sub-committee on Health of the U.S. Senate Finance Committee for the Association of American Medical Colleges and the House Appropriations Committee of the Virginia General Assembly.

His name became a magnet when one was looking for a volunteer. He served as chair of numerous other efforts including the National Congress of Hospital Governing Board of the American Hospital Association’s Committee on Research and Development, the Research and Development Committee of the Greater Norfolk Corp., Virginia Tech’s South Hampton Roads Campaign for Excellence, Virginia Tech’s Engineering Advisory Board, and the Campaign for South Hampton Roads. He also served on several task forces for the Mayor of Norfolk.

He is or has been a member of numerous other organizations such as the Greater Norfolk Corporation, Virginia Wesleyan College, Westminster Canterbury, Bayside Presbyterian Church, Norfolk Rotary Club, Foundation Board of United Way, and the American Hospital Association.

When he turned 75 and found he was still logging in some 30 scheduled meetings a month, he decided “to get off all of them. Then I got bored, so I am back on six now,” says the man who amusingly describes himself as having inherited his father’s hyperactive gene. “Everyone needs to participate. If you don’t like something, then find something else.”

He says that what he has learned from all of his varied types of work is that “you must get rid of your weak sisters. No matter what type of organization you are in, it is no better than the people who run it.” With that said, he adds that the line-up of Deans of Virginia Tech’s College of Engineering since he re-involved himself “is as good as you will find anywhere.” Paul Torgersen, Wayne Clough, Ed Henneke (interim), Bill Stephenson, Hassan Aref, and Richard Benson are a “cadre of people that one would be hard-pressed to match.”

Middleton has earned three Norfolk city awards: Citation for Outstanding Service in 1977, Business Appreciation Award in 1990, and First Citizen of Norfolk Award in 2002. In 1997, he received Virginia Tech’s College of Engineering Outstanding Service Award. He has received several health care awards and was named the 1992 Tidewater Council of Boy Scouts’ “Good Scout.”

Today, Middleton and his wife of 22 years, Elizabeth, who has an art degree from Virginia Wesleyan College, enjoy taking trips that involve art galleries, most recently spending time at New York’s Hudson Valley where there was an exhibit of some 40 Andy Warhol paintings, and another one at John D. Rockefeller’s home. “One of those painting didn’t just cost as much as my home; it cost more than my entire neighborhood,” he muses.

Middleton insists that enough cannot be said about the part Elizabeth has played in any successes he has had. She has not only run the office of E.G. Middleton, Inc., but has also encouraged him and been his chief cheerleader in all things.

He has a daughter, Melissa, who teaches gifted students, in addition to his son Rudy. He is the stepfather to Elizabeth’s three daughters. They have 11 grandchildren and the entire family resides in the Tidewater area.
Nicholas M. Mihalas
B.S. Chemical Engineering, 1959

Nicholas M. Mihalas, the son of Greek immigrants, did not speak English until the first grade. His parents operated a diner in Norfolk, Va., but his father died when Nick was only four. His mother, Vivi, left with three young children, all under six, guided them to adulthood with a set of rules that Nick remembers today. “Vivi’s Rules” were simple yet provided a firm foundation to the man who would eventually become the President of the international company Timex.

Getting a good education was Vivi’s Number One rule; his mother was a schoolteacher in Greece, and Nick complied with his mother’s principle when he selected Virginia Tech’s College of Engineering in 1955. He had been a star athlete at Maury High School of Norfolk, president of his senior class, and the student mayor of Norfolk for a week. Some 25 colleges attempted to recruit Nick, but he selected Virginia Tech, because it was the “one school that allowed me to practice football after my engineering classes. Other schools, including Yale and Georgia Tech, discouraged me from studying engineering,” Nick recalls.

As a chemical engineering student, Nick managed his time wisely, becoming an All-American athlete as well as being selected on the All-Southern Football Conference Team. Nick found in Frank Moseley, Virginia Tech’s coach at the time, an alignment with his mother’s principles. “Frank Moseley also inspired my life, insisting on my getting a good education, being prompt, being a team member and being competitive.” Nick says. Nick, an offensive center and a defensive linebacker (they had to play all 60 minutes then), had those team skills tested when his roommate broke his ankle. Coach Moseley told Nick to learn the plays of his roommate, an offensive end, for their next game against Florida State. “We won the game, and I luckily scored the winning touchdown,” Nick reminisces.

Off the playing field, Nick was busy with the Corps of Cadets, and eventually being commissioned 2nd Lieutenant as a Distinguished Military Graduate. “I learned leadership skills through the Corps,” Nick says. Unfortunately, a football injury to his back disqualified him from becoming an Air Force pilot (he had earned his pilot’s license at the Blacksburg Airport), so he stayed in the reserve after his graduation in 1959. Nick took his first job with General Electric of Philadelphia, Pa., as a design engineer, authoring two papers on space propulsion systems. He stayed with GE for 10 years, becoming a project manager, and spending six of those years as President of General Electric’s Employees Organization, a group of some 30,000 members. As President, he was responsible for the organization’s entire cultural, recreational, and charitable budget. One of his key successes was the Olympic Fundraising Drive for his area, and he was fulfilling another one of Vivi’s Rules: “Be kind and charitable to people, and it will be returned.”

In 1971, Nick made his move to Timex as the General Manager of its Instruments Division. “We worked on artillery fuses, gyroscopes, control packages, ship chronometers, and many other electronic components for defense companies.” Nick says. After three years, during which time Nick maneuvered Timex to become the world’s largest producer of gyroscopes, he was promoted to Vice President of the Industrial Group. Ironically, the division included everything but the company’s famed timepieces. Nick orchestrated the purchase of GE’s clock and appliance timer business, and the electronic products divisions of Intel and RCA. “We made the Timex Industrial Group an extremely large product group,” Nick says. At the same time, Nick managed to obtain his master’s of business administration from Pepperdine University in 1974.

In 1977, Timex promoted Nick to President, this time asking him to re-engineer its wristwatch production to compete with the electronic competition already introduced to the marketplace by Far East competitors. Nick immediately began to close all of Timex’s mechanical watch factories and converted them or created new facilities that concentrated on the electronic quartz watches and liquid crystal displays. Nick also introduced Timex to sports marketing, becoming the official timekeeper of ESPN sporting events, NASCAR, marathons, and the first corporate sponsor of the PGA tour. Nick also started Timex’ move into medical electronics and low price computers. Nick’s presidency of the worldwide company actually meant the administration over three entities: Timex Corporation in the U.S., Timex International in Bermuda, and Timex Ltd., in Lausanne, Switzerland. The company had 25 factories from Europe to the U.S. to Asia. Nick completed the restructuring, and took the company private during his tenure, with a European family purchasing 100 per cent of the stock. “The presidency was a tremendous challenge. Timex was a darling company of Wall Street, but as the largest watch company in the world, Timex was on the verge of going out of business because it had failed to respond to the electronic revolution,” Nick explains. Subsequently, Nick was awarded the J.L. Lemkuhl Award for his superior management and turnaround of Timex.

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In 1982, deciding to become an entrepreneur after 20 years of corporate life. He established three companies: a real estate investment firm with properties in Indiana, South Carolina, Georgia, and Florida; a consulting engineering firm that specialized in the turnaround of underperforming companies; and an investment and management firm for early stage start-ups. Nick spent much of his time working for venture capitalists to restructure poorly performing companies. One example was his chairmanship of Smart Card International Inc of New York, the first U.S. manufacturer of intelligent credit cards. Another was Chase Manhattan’s hiring of Nick’s company to rectify the under-leveraged Mobile Drilling Co., of Indianapolis and to maximize its value prior to its sale to a Canadian firm.

After that venture, Nick retired as an operator of underperforming companies and moved his real estate and consulting business, Diablo Partners, to Charleston, S.C., and he and his wife Elaine of 38 years live nearby on Kiawah Island, S.C. They have two children, Michael, a systems engineer with Cisco Systems, and Christina, who works in marketing for Rotech Healthcare, Inc. in California. Nick continues to stay busy, as Vivi would have prescribed, and over the years he has contributed time as a director or a trustee to the Waterbury Hospital and a savings bank in Connecticut. He was also extremely active in business and industrial development in Connecticut, and the Chamber of Commerce. He has served on numerous advisory commissions and as a trustee of a private school. He was the first executive director of the S.C. World Trade Center.

“As my mother said, family, friends and health make for a real life. Life is short enough. She believed that everything should be taken in moderation. We should have real passion for some things, not everything,” Nick reflects.
Mary G. Miller
Computer Science
Class of 1985, MS

When Mary Miller showed her father the letter informing her of her nomination to the Virginia Tech Academy of Engineering Excellence, the 89-year-old retired engineer from McDonnell Douglas had tears streaming down his cheeks. He told her, smiling, “You came from good genes.”

She agrees, saying she inherited her father’s mathematical abilities, and she had strong role models who encouraged her along the way. Her high school math teacher, Sally Werth, took an interest in Mary, and became a life-long friend. So did Barbara Crittenden, whom Dr. Miller describes as the “hardest, toughest math teacher at Virginia Tech. No one wanted to get in her class,” except the unflappable Mary. When she was chosen as an Outstanding Woman Alumna at the 75th Anniversary of Women at Virginia Tech in 1996, Dr. Miller invited Barbara Crittenden to be her guest.

Dr. Miller entered Virginia Tech in 1968, when women were less than a tenth of the student population. As a female in a predominantly man’s world, she was sidetracked for awhile before truly finding what doors her talents could open. She sought her first degree in elementary education because she knew women could get teaching jobs. Certified to teach in K-12, she landed her first full-time position as a sixth and seventh grade teacher in Pulaski County, Va. She took a sabbatical after three years to have her two children, Matthew and Mandy.

Her traditional route was about to stop. In 1979, after she had returned to work, teaching math through the Marion, Va., Job Corps, she decided to take a class in programming at Wytheville Community College. She arranged child care for her then two- and three-year-old children, and arrived at the fully enrolled class with an attitude. “I planned to force add (the course) even though the professor, Bill Durham, a retired NASA programmer, said no one could be added. I stayed after class, and told him, ‘he wanted me in his class, and that I would be his best student, and I would even help the others.’ ”

Her tenacity worked, and it was later that she discovered she had force added the wrong class – it was the second in a series on programming, not the first. She never let Professor Durham know, and he found her talented enough that he suggested she use his personal processor. “He inspired me to think more, to do more, and I decided to return to Virginia Tech for my computer science (CS) degree.”

So in 1983, she rented a house with her children, Matt and Mandy, in tow, and became one of
30 graduate students in the CS department. “I got involved with computer-assisted learning ... which opened fascinating doors, but as a mother I was not mobile,” she recalls. During her second year, she had an assistantship with J.A.N. Lee, who founded the computer science programs at both Queens’s University at Kingston and the University of Massachusetts at Amherst before moving to Virginia Tech. “He had a huge influence on me. He pushed you to think,” she recalls.

Virginia Tech was just beginning to move its faculty into computing, and the Provost at the time, David Roselle, was requiring two faculty from each department to take Dr. Lee’s CS course. Since Dr. Miller was his assistant, she taught a good number of these classes, and by the end of the term, she had four job offers from within the university. Fortuitously, she selected the one from Mitch Giesler who was the dean of extension. “It was a life-changing job. I had one year of a guaranteed salary, and then I needed to fund myself with grant money. Interactive video was just taking off,” she says, and she entrenched herself in the new arena.

The job was to investigate new and exciting ways to deliver information to the citizens of the commonwealth, supporting the outreach mission. Joe Meredith, today the director of the Virginia Tech Corporate Research Park, was working at Newport News Shipbuilding at that time, and had come to campus promoting a new authoring system for interactive video. He challenged the university to get involved and Giesler agreed, giving Dr. Miller the assignment to investigate the power of the technology and write grants.

“My life has always been blessed,” Dr. Miller says, describing how the next chapter started. She was asked to demonstrate the training video at an extension training conference, and in 1986 she was showing what a voice-activated computer could do.

Later she and Giesler arranged to present her innovative work on a public-access information system at a private meeting with members of the Kellogg Foundation. The 90-minute presentation on the concept of interactivity using the computer netted another $1.3 million grant, and the lab called Interactive Design and Development (IDD) at Virginia Tech was born. The facility’s first office was in the Old Security Building on campus, and IDD soon was picking up some significant projects such as a grant to produce a CD-Rom of agricultural information for the National Agricultural Library. The groundbreaking disk contained some 50,000 pages with more than 30,000 images. “It was the first CD-Rom produced by Virginia Tech,” Dr. Miller says, and the year was 1989.

Two years later, the national economy took a major downturn and the university offered to let Dr. Miller spin out IDD from Virginia Tech in a budget-cutting move. Nervous, she sought the advice of her colleague, John Moore, who told her, “Failure was in not trying,” and that she could always come back to the university. Emboldened, she started floating the idea of the private IDD, and she secured enough contracts for the first six months. She rented space in a building on North Main Street in Blacksburg, owned by the late Dick Talbot, the first dean of the college of veterinary medicine. From there, she moved to Virginia Tech’s Corporate Research Center, now directed by Meredith, and eventually to her own building on Sheffield Drive.

“My greatest joy in owning IDD is the people and the clients. My life is like a dance. I spin off and do something else. We have reached millions of people. We do serious information technology development and we produce quality educational products,” she says. Her clients include such organizations as the American Federation of Teachers, members of the health care industry, and Fortune 500 companies such as Hewlett-Packard, Citibank, and Dow Chemical.

And in the middle of founding the new company, she decided she still needed to learn more, and enrolled in a doctoral program in curriculum and instruction at Virginia Tech, earning her Ph.D. in 1996 after three years, going part-time. That same year, IDD was recognized as one of the Top 100 Multimedia Developers in the United States.

For the past 20 years, Dr. Miller has served both Democratic and Republican governors of Virginia, starting with the first ask from Secretary of Technology Don Upson in the 1980s to help him confront IT problems. She remains in contact with Aneesh Chopra, the immediate former Virginia Secretary of Technology who is now the nation’s first Chief Technology Officer, as well as Eugene Huang, who is currently helping to craft the National Broadband Plan. She has assisted in Virginia’s efforts to strategize and implement the use of technology across the state’s agencies and institutions of higher learning, and remains a member of Virginia’s Information Technology Investment Board. She was one of the founders of this board, and served as its chair of the evaluation and governance committee from 2005 until 2009.

She was the first woman to serve as the president of the Blacksburg Rotary Club, and she is the president of the NewVa Corridor Technology Council, representing some 208 companies in the region. She is a former member of Virginia Tech’s College of Engineering Advisory Board and is on the university’s Computer Science Advisory Board.

She and her husband, Jim King, reside in Blacksburg. They are members of the Committee of 100. She has served on the College Advisory Board.
Cold rooms, no running water, and a wood-burning stove to cook on – these were the amenities Norris Mitchell had while growing up in Carroll County, Va., in the late 1930s. When he was six years old, the family home was finally connected to the electric grid, but the youngster’s excitement was soon deflated. His parents decided to sell their dairy farm, and the move to a new agricultural venue meant no electricity again for several more years.

Going to school did not improve his comfort level much in those days either. The young Norris attended a one-room schoolhouse catering to the first seven grades, but with only about 30 children in attendance. The theme remained the same: no electricity and no plumbing. And he had an added class assignment — as he grew older, he became responsible for keeping the coal-fired stove burning.

Maybe this explains why Mr. Mitchell today is a partner in the owning of close to 1000 apartments and townhouses in the Mid-Atlantic under his business name of MG Apartments, and he can point proudly to all of the amenities they provide. Until recently, they owned a Comfort Inn on Glebe Road in the Washington, D.C., bedroom community of Arlington, Va.

Mr. Mitchell’s transition from country boy to real estate mogul found its way through Virginia Tech’s College of Engineering. “Growing up, it was always a question of where I would go to college, not if. Same with my brother and two sisters. My mother went to college and became a teacher and a principal. In fact she was my teacher for first and second grades,” Mr. Mitchell recalls, and not without admitting laughingly that he “often bore the brunt of it.”

Historical records will show that he was in the last class to graduate from Sylvatus High School, about ten miles south of Hillsville, Va., which shut down in 1954, the same year segregation in U.S. public schools was ruled unconstitutional. At that time Sylvatus only went to the 11th grade. His class had about a dozen teenagers so “everyone had to be an athlete,” he smiles. He played baseball and basketball, but doesn’t recall any trophies coming to the tiny school. However, on the academic side, he was able to leave with a scholarship in hand for Lynchburg College where he spent his freshman year.

“I started to learn a little bit about the world, and decided aeronautical engineering was for me,” he says. When he transferred to Virginia Tech, he was also able to secure a co-operative education appointment with the U.S. Navy at Patuxent River, Md. He worked in the performance section, collecting data on flight tests of aircraft carrier based fighter aircraft.

As he enjoyed his work experience with the Navy during the winter and summer quarters, alternating with attending classes during his fall and spring quarters, he considered becoming a pilot, then settled on an engineering career involving missiles and rockets. He excelled in his coursework, with inductions into a few of the University’s honor societies, and served on the Honor Court.
Investigation Committee.

At the time of his graduation in 1958, Sputnik I had just orbited the Earth the previous fall, and the space race was on with the U.S. far behind the then Soviet Union. Everyone in his aerospace class was getting four or five job offers, but they were all over the nation. The country boy was not about to stay home.

“At that age, everything was an adventure,” Mr. Mitchell recalls. So when he elected to travel 3,000 miles across the country to join Douglas Aircraft of Long Beach, Cal., (a company that would later become McDonnell Douglas and ultimately merge with Boeing) no one was surprised. He spent two years in the Golden State working on aircraft development and then moving to its space division. In 1960, he was transferred back East to Charlotte, N.C., where he labored behind locked doors performing classified work. While there, he served as the chief of the aerodynamics program, and worked on a number of proposals for peripheral parts of the space program. These included escape rockets to serve if a malfunction occurred, various steering components for the re-entry of space vehicles, and a range of Army missile programs. In 1966 he was transferred to the Washington, D.C., office of Douglas Aircraft.

The Cold War era provided an atmosphere of military tension between the Soviet Union and the U.S. and its western allies. Mr. Mitchell became one of about 25 scientists and engineers engaged in a think tank with the Research Analysis Corporation, performing weapon system analysis studies for the U.S. Army after leaving Douglas. During this time, the Vietnam War was also raging. Mr. Mitchell’s efforts were mostly devoted to air defense projects. Among his projects, he worked on the Patriot Air and Missile Defense System, now considered the world’s most advanced air and missile defense system.

Eventually, a private company acquired the Research Analysis Corporation, and Mitchell relocated to Science Applications International Corporation, today called SAIC. “It was the same job, just a different employer,” Mr. Mitchell explains.

In 1968 Mr. Mitchell began mixing his more than full-time job with a desire to move into the real estate market and, with friends, purchased his first apartment building. He spent five years combining his full time job with his increasing appetite for the real estate marketplace. “My transition was gradual,” he says, “and although the process was different, many of the concepts of things working together were not.” In 1974, he changed careers completely, and moved his brainpower to his own entrepreneurial effort. He and his partner became MG Apartments, and they worked together fulltime, managing their expanding real estate.

This partnership resulted from his early days at Douglas Aircraft where Mr. Mitchell had become friends with Joe Gardner. Gardner’s wife, Betty, sold Mr. Mitchell his home in Northern Virginia, one he says he “bought on a boot strap.” When Betty’s small firm lost its two business partners, she took it over, renaming it after herself, Gardner Home Realtors, and Mr. Mitchell soon became a 50-50 partner.

Along the way, Mr. Mitchell and a group of local Northern Virginia businessmen founded Virginia Commerce Bank, a commercial bank that has now grown to a $2.9 billion institution with 28 Northern Virginia branches. Mr. Mitchell is currently one of the two remaining founders on the bank’s board of directors.

In addition, one of his more satisfying enterprises was his service for 22 years as a member of the Flint Hill School’s Board of Trustees. He was vice chair of the board and chair of the building committee of this private school in Oakton, Va. His position allowed him to oversee the design and construction of a new upper school building and campus, allowing for a student body of approximately 1100 students. He remains a trustee emeritus of the board of trustees.

Mr. Mitchell’s real estate holdings took a nostalgic turn when he built a second home for his family, back in his old stomping grounds of Carroll County. He and his partner also purchased what would become the Olde Mill Resort, an 800 acres planned resort community, including a golf course in Carroll County, near the bucolic Blue Ridge Parkway.

Although Mr. Mitchell acknowledges that he himself doesn’t drive a golf cart around 18 holes, he does admit that his personal expanding real estate allows him to house and keep running his 20 or so antique cars that he has collected since the early 1980s. “When I was young, I always wanted a Model A,” he reveals. But his prize vehicle was identified when he traveled through Memphis, Tenn., and saw the jet black Stutz Blackhawk on a Pontiac Grand Prix chassis owned by the infamous Elvis Presley. “It was a beautiful car,” the antique connoisseur says. One sits in his collection today, and is sheltered by his four–car garage attached to the Carroll County home. Two more “car barns” exist on the property.

In his seventies, Mr. Mitchell has no plans to retire. “I can’t imagine getting up in the morning with nothing to do,” he explains. But he and his wife Laura do travel, mostly within the U.S. these days. They sojourn to their favorites places such as Yellowstone Park, and other states in the west. When he is at his McClean, Va., home, he has solace in the fact that he lives near his work, yet in a wooded community.

An avid Hokie, Mr. Mitchell says he has always had “an infinity” for Virginia Tech. “It allowed me to get through school. The mechanics were set up so I could get a job.”

So he has given back many times over, establishing the Mitchell Professorship in aerospace and ocean engineering, held by world-class researcher Rakesh Kapania. The Mitchells also added a scholarship endowment in the same department. He is a charter member of the University’s Ut Prosim Society.

He has already created the Mitchell Foundation that is geared towards education and medical research. His interest in the latter came from his concern about the daughter of his real estate partners who was in a car accident that left her a quadriplegic. The same partners also have a grandson who is paralyzed.

“If I had stayed with the think tank, I never would have been able to” become a philanthropist, Mr. Mitchell adds. “It was the right choice at the right time to make that move.”
Steve Mollenkopf

Electrical Engineering, Class of 1992, BS

Steve Mollenkopf admits he is often the “last person standing” when he makes a decision that involves risks. But he would not have it any other way.

In fact, what truly bothers him is when people shy from making decisions that involve possible liabilities because, as he advised, “If you are a leader, it is your job to take risks.”

At 45, his philosophy has paid him great dividends. Twenty years have passed since he accepted his first job offer as an entry-level electrical engineer at a then fledgling start-up company called Qualcomm. Today, Mollenkopf serves as the chief executive officer of this lightening fast growing $25 billion a year business. His career trajectory has soared from his upbringing in Baltimore, Maryland by parents who were both school teachers.

He credits his father and brother as influential personalities in his life choices. When his dad coached him on his high school basketball and lacrosse teams, his locker room advice to his athletic son was to make mistakes by throwing the ball away, not by holding onto it. Now in the corporate board room, Mollenkopf uses this analogy with his more than 30,000 employees.

And how did he decide to move 3000 miles from his family’s east coast home to California’s self-proclaimed innovation hub for collaboration between wireless technology and the life sciences? He thanked his brother who suggested he interview with Qualcomm in 1994, at that time a nine-year-old wireless telecommunications company based in San Diego. Steve had already profited from his older brother’s advice to study engineering at Virginia Tech, now alma mater to both of them.

Steve’s early trips to Blacksburg, Virginia started at an impressionable age, just as he was becoming a teenager. When it was his turn to apply to a university, he was quite familiar with Virginia Tech’s reputation and he “loved the town” so he basically sole sourced his options.

As a Hokie, Mollenkopf juggled the demands of a tough academic curriculum, successfully becoming a member of the electrical engineering honor society, with the grueling schedule of an athlete on the men’s lacrosse team. The combination had him studying for his coursework on average five to six hours nightly while practicing lacrosse six days a week during spring semester, and five days a week with games on weekends for the remainder of the season.

He had no complaints. Neither did his mentors. Electrical engineering professor Warren Stutzman said, “Steve was in one of my large classes in 1990, but I remember him as one with unusual maturity for his level and as having true potential for accomplishing big things.” Stutzman later employed Mollenkopf’s talents as an undergraduate to work on some of his antenna projects conducted mostly by graduate students. “I was the lowest rung on the technical ladder,” Mollenkopf acknowledged. “But it got me exposed to graduate work.”

He may have been the “lowest rung” but Stutzman said Mollenkopf’s work on an antenna project range remains today, more than 20 years later, on the roof of Whittemore Hall at Virginia Tech and, most impressively, is still operational.

On the lacrosse field, Joel Nachlas, professor of industrial and systems engineering, led the Hokies for four decades before retiring as head coach, and four of those years were spent with Mollenkopf. Nachlas described Mollenkopf as “one of his best players and a super guy ” — strong accolades from a man who coached some 2000 students during his career. “He served as a team leader and as a role model for his teammates. Naturally, this was a result of his ability to manage his time well,” Nachlas added. With mutual admiration, Mollenkopf recalled his time with Nachlas as “great” and as “one who influenced so many kids.”

“I received a great broad-based fundamental engineering education from Virginia Tech. It prepares a person very well to be a practicing engineer. You can see that through the various successes of its alumni,” Mollenkopf reflected.

His stint in Stutzman’s research group helped convince him that he wanted to pursue graduate school and, to broaden his horizons, he selected the University of Michigan at Ann Arbor. While a graduate student, he married his Virginia Tech sweetheart, Susan Beth Thurston, a marketing major, and together they made the 1994 career decision that involved a fair amount of risk. So much risk, in fact, that they hesitated to buy a home at first until they were less apprehensive about job security.

“I selected Qualcomm because the people working there were really high caliber. It was important to me to be part of a group of people I could learn from. Qualcomm was ramping up to commercialize its CDMA (code division multiple access) technologies,” Mollenkopf said. CDMA allowed several transmitters to send information simultaneously over a single communication channel, allowing several users to share a band of frequencies, a revolutionary technology for its time.

Mollenkopf found that he was using every vital piece of information he had learned in his antennas classes as he worked on Qualcomm’s global satellite system. This system provided the calculations for the CDMA-based cellular base station.

Following his successful role with the commercialization of CDMA cell phones, base stations, and chips, Mollenkopf was tasked with developing Qualcomm’s Universal Mobile Terminal System, more commonly known as 3G. His team was able to develop a
receiver and tie it into the CDMA. In 2003 he introduced the first universal mobile telecommunications system (UMTS), enabling Qualcomm to take a lead position in this emerging technology, also known as Wideband CDMA.

The technological engineering success was outstanding, causing a small conundrum for the man who has seven patents in his name. From a professional level, Mollenkopf was not personally sure he wanted to transition into management. Conversely Qualcomm was positive, promoting him in April of 2002 to a vice-president of engineering.

He admitted his hesitancy, saying, “I was reluctant... but our research is a mix of engineering and business. With a company like Qualcomm, we make bets on a particular technology,” Mollenkopf said. “I thought it would be a big transition, but it really was not. As with most international technology companies, the sun never sets...much like the research growth at a University. You are always thinking about the projects.”

“Steve then headed the smart phone program inside Qualcomm which had full 3G capabilities and much more complex modems. He led the interaction with Samsung, HTC Corporation, Motorola, and Apple, delivering highly complex chip sets for smart phones. He demonstrated with his team that such chip sets could be built and delivered on time and with a high profit margin,” said Sanjay Raman, associate vice president of Virginia Tech’s National Capital Region, and Ed Tiedemann, Qualcomm’s Vice President of Engineering and a Fellow of the company.

For the next few years, he leapfrogged through the company’s administration, serving: as senior vice president of engineering and product management from 2006 until 2008; as executive vice president of QCT product management for three months in 2008; as executive vice president of Qualcomm Inc., from May of 2008 until November of 2011, and its president and chief operating officer from November of 2011 until March of 2014. He held some dual titles during those times, including: group president at Qualcomm Inc., from September 2010 until November 2011; group president of Qualcomm CDMA Technologies from September 2010 to October 2010, and its executive vice president from August 2008 to November 2011. On March 4, 2014 he became the CEO.

As he mixed the roles of technocrat with his Wall Street acumen, he found himself emailing people in the middle of the night with some new insight or question. As Qualcomm’s top executive, he readily admits he doesn’t have all the answers, and that is why he likes to surround himself with strong people.

“We are an aggressive company but we treat people well. Look at what our people are able to work on. Our employees are satisfied because we are at the center of the mobile technology industry. We are lucky to have maintained relevance over multiple decades,” said the man who also chairs the Global Semiconductor Alliance, a group of more than 400 companies with over $300 billion in sales.

“Steve empowers the teams working under him to make their own decisions to meet the objectives that have been developed. He works to set high goals. He involves the teams in the decision making process...and he focuses on the big picture trying to make sure that the objectives are set right...,” wrote Raman and Tiedemann in their nomination of Mollenkopf to Virginia Tech’s Academy of Engineering Excellence.

This “big picture” allows Qualcomm to claim its role as the largest supplier of semiconductor chips for mobile phones, as the third largest semiconductor company in the world, and as the largest fabless semiconductor global company. The combination of these statistics makes Qualcomm one of the top international electrical engineering companies.
Dr. E. Towson Moore  
B.S. Electrical Engineering, 1958

In the early 1950s, E. Towson Moore, as a young teenager growing up in Wytheville, Va., was introduced to “ham radio” by a newfound friend and mentor at the local radio station. The radio technician was “probably the closest occupation to an engineer in the entire town of 3500,” he says. “He helped me with the building of a homemade transmitter, and I would get up at 4 a.m. and talk in Morse code to people all over the world. That started my interest in electrical engineering,” Towson explains.

Towson had already sharpened his mechanical skills, working on the family farm. “I spent a lot of time on our John Deere tractor, and I always had to fix parts or get things welded.” And if he wasn’t feeding the Angus beef cattle on the farm, he could be found at his father’s lumber company, helping with the retail business. The busy youngster still found time for sports, although Wytheville High School only offered its basketball team an outdoor court in the 1950s. “We had some cold practices,” he smiles, and “all of our games were away.” When he selected Virginia Tech’s respected engineering program, he thought he might continue his basketball playing as a walk-on for the team. “It wasn’t long before I turned to the track team,” he reports, “and being on that team was as important to me as anything I did in college. I lettered as a high jumper.”

When Towson arrived at Virginia Tech, he found most of his classmates had come from more advanced 12-year school systems. Having just graduated from Wytheville’s at-that-time 11-year system, Towson remembers, “I was a little awed. For many of these students, the freshman math classes were almost a review. I had to scramble that first quarter” to keep up, the southwest Virginia native recalls. But the true competitor was later inducted into three academic honorary societies at Virginia Tech: Phi Kappa Phi, Eta Kappa Nu and Tau Beta Pi.

Keeping his tradition for a busy schedule, he was also a four-year member of the Corps of Cadets. Towson recalls an added bonus of being with the Corps was the uniform took care of almost all of his clothing needs. “I did not come from a wealthy family,” and the Corps and ROTC program “solved some of the financial burden.” Upon his graduation in 1958 as a newly minted Second Lieutenant, he entered the U.S. Army. He served the active portion of his military obligation at Aberdeen Proving Grounds, and then spent a few months with Sperry Corporation designing components for inertial navigation systems. At Sperry, his supervisor was a physicist with a doctorate from Duke University. “He was influential in my life,” Towson recalls, and he soon decided to pursue a similar track while he was still a bachelor with no obligations. Duke accepted Towson and provided him with a Shell Engineering Fellowship, making it possible for him to be a full-time student. Graduating in 1963, Towson holds the distinction of being the first doctoral graduate of Duke University’s engineering college.

Towson’s academic ability caught the attention of Thomas Wilson, a Ph.D. from Harvard University, who became his faculty research advisor. Together, they authored numerous technical publications and were issued several patents related to the pioneering work they were doing at the Spacecraft Power Systems Group at Duke. At that time, when the U.S. was in the midst of the space race, NASA funded most of the laboratory’s work. Upon Towson’s graduation, he and his advisor started Wilmore Electronics Co., Inc., near the university campus. They chose the name Wilmore as a combination of their two last names.

“Duke encouraged its faculty to work one day a week in industry, so Tom was able to spend time at Wilmore. “We bootstrapped the new company, borrowing money from the bank — as much as they would lend us,” Towson recalls. “We had done some good work at Duke, so we were able to obtain some research money from NASA to investigate power systems and synchronous satellites.” During these early years, Wilmore developed and built equipment for a number of scientific satellites, including Pioneer 10, which was launched in 1972, left our solar system in 1987, and now eight billion miles from earth is the most distant man-made object in the universe.

Towson, who has served as Wilmore’s President and CEO since its founding, gradually moved his company, and its subsidiary, Energy Dynamics, Inc., into manufacturing. “Now 80 per cent of what we sell is proprietary products. We are not interested in selling research unless the R&D leads to manufacturing. We are proud that, since we started hiring manufacturing people in 1970, we have never laid anyone off. We have about 100 employees” between the two companies.

Energy Dynamics, located in rural Caswell County, N.C., is an interesting concept in business developed by Wilmore. “We have a lot of manufacturers dependent on us to ship products on time. Regardless of the reason — fire, flood, tornado — if we cannot deliver our products, it could shut them down. So we have encouraged people to trust in us by having a redundant plant that duplicates all of our capabilities. This is not commonplace for a small operation,” Towson explains. The two locations provide state-of-the-art industrial power converters to a wide base of domestic and export customers, including energy, utility, vehicular, data communications, and railroad industries. Their customer base extends beyond the U.S. to more than 20 foreign countries.

“My first love has always been the technical challenge involved in the design and development of new products, and I have made a point of continuing a strong involvement with this aspect of the business,” Towson says. “I have always made sure that the administrative responsibilities have not driven a wedge between me and the technology. It’s a wonderful coincidence and a real blessing when one can earn a living at something that is truly fun.” Not surprisingly, he continues to work full time. Along with the fun and challenges of family and work, Towson found time to take a special interest in the regional Goodwill Industries, serving as the Chairman of its Board of Directors, and in the nearby Durham Technical Community College, serving as a member of its Board of Trustees for nine years. He also served on its Foundation Board and on the Industrial Advisory Committee to its Electronics Technology Program.

In 1965, he married Linda Lunsford, a 12th grade teacher who chairs the English Department at Northern High School, Durham, N.C. They have two children: Alan who graduated with a bachelor’s degree from North Carolina State and a master’s from Campbell University; and Jennifer who received bachelor’s and master’s degrees from Duke University, and a second master’s degree from the University of Maryland.
Earl F. Myerholtz  
B.S., Industrial Engineering, 1948

In December of 2002, Northrop Grumman Corporation became a $25 billion global defense enterprise, providing technologically advanced, innovative products, services and solutions in defense electronics, systems integration, information technology, nuclear and non-nuclear shipbuilding, and space technology. Northrop’s value had just increased substantially, becoming the nation’s second largest defense company, because it acquired TRW’s interests in these areas.

Looking back at the history of TRW, one of the men who transformed it into a highly profitable company was Earl Myerholtz, a 1948 industrial engineering graduate of Virginia Tech. At TRW, he was asked several times to streamline operations throughout the 1960s and 1970s. In one instance, he combined TRW’s tool cutting operations, saving the firm some $5 million annually. He achieved similar success at another TRW location, recording another $3 million in annual savings. At another stage of his TRW career, he assumed directorship of its bearings division. It was 1975, and the Japanese had started a thrust in this manufacturing area. Mr. Myerholtz went head to head with the Ministry of International Trade and Industry, forming a task force to suggest the U.S. raise tariffs on imported bearings. With the task force, he successfully lobbied the U.S. Congress and TRW held its own in the bearings marketplace.

TRW provided Mr. Myerholtz with the opportunities to meet his personal career goals. “My plan was to enter the aerospace and defense business. I felt that my technical skills gave me an advantage in this area,” he says. He started at TRW as its Corporate Director of Manufacturing Services in 1964. In 1966 he became the Vice President and Division Manager of the Mechanical Products Division. Five years later he was named the Vice President and General Manager of the Marlin Rockwell Division. In 1979 Mr. Myerholtz became the Vice President and General Manager of the Industrial Products Group where he remained until his retirement in 1986. He introduced productivity measures such as employee team management. He was also instrumental in the introduction of the co-op program at TRW, developing a strong relationship with Virginia Tech’s College of Engineering.

A native of northwest Ohio, Mr. Myerholtz first attended the University of Toledo as a chemical engineering student prior to World War II. But in 1942, he enlisted in the U.S. Army after his poor eyesight would not allow him to join the Navy or the Marines. He recalls his persistence at enlisting: “I had so many friends going into the service I felt an urge that I should be there too.”

A bout with pneumonia probably saved his life during the war. He was stationed in southern Belgium just before the Battle of the Bulge. His medical condition forced his evacuation to Scotland in December of 1944. After he left, his company suffered 70 percent casualties.

After his recuperation, he returned to the Continent where he spent the remainder of his time as a first sergeant in the infantry. He enjoyed his leadership role, and it made him question his choice of chemical engineering as a career. “I knew I wanted to enter management. During the War, the Army sent me on a brief tour of duty to Blacksburg to increase my technical competency. I spoke with Earl Norris, Dean of Engineering at the time, and with Paul Norton, who was the IE Department Head at Virginia Tech. He also owned a materials handling business in Columbus, Ohio. After my discharge from the Army, I had decided to switch to IE, and the reading materials on the IE profession frequently referred to Professor Norton. So I decided to enroll at Virginia Tech.”

The fact that he had met Betsy Draper while he was on his tour of duty in Blacksburg was a pleasant bonus. He and Betsy married in the June of 1946 and they lived in Pembroke. Recalling the daily commute, Mr. Myerholtz sounds like a productivity expert: he says he could make the trek in 22 minutes on a good day.

Upon his graduation, Mr. Myerholtz had 12 offers of employment. He selected General Electric because of its highly touted management/training program. Within two weeks of starting his career in the test-engineering program, he was suggesting some production changes to the administration of GE’s headquarters in Lynn, Mass. Consequently, they moved him immediately into the management/training program. Next, he recommended to GE how it should change its management/training program. Management took his advice and subsequently, Mr. Myerholtz held a series of upper level positions at GE before he moved to TRW.

Mr. Myerholtz was active for many years on the IE Advisory Boards at Virginia Tech and at Georgia Tech. He was also a board member for the following organizations: Women Christian Association Hospital of Jamestown, N.Y., St. Luke’s Hospital of Cleveland, Ohio, the YMCA and the Salvation Army. He served as Chair of the Board of Anti-Friction Bearing Manufacturers Association and as President of the Jamestown Area Manufacturers Association. He was Vice President at Large and member of the board of the Institute of Industrial Engineering. At Virginia Tech, he is the 1999 recipient of the Marvin Agee Distinguished Alumnus Award of the Industrial Engineering Department and a member of the College of Engineering’s Committee of 100. He received the Outstanding Trustee Award from the Greater Cleveland Hospital Association in 1994.

He retired in 1986 and continues to reside in Chagrin Falls, Ohio. Widowed in 1998, he and his wife Betsy are the parents of two daughters, Sue Cameron and Pamela Brose. He has five grandchildren.
In 1939, Ross Myers’ father and grandfather sold six dairy cows in order to purchase a dump truck, a symbolic beginning for their new local hauling company, Allan A. Myers and Son, located in the Philadelphia suburbs. More than 30 years later, in 1972, Ross would join the family business. During his first year with the company, it grossed $200,000. Today, as the president and chief executive officer, he acknowledges that if the company doesn’t perform $200,000 worth of business in the first hour of every day, it can’t break even.

Mr. Myers, an extremely successful giant of today’s construction business, recalls his rise to prominence started modestly. He claims he was an adolescent “geek.” As a young boy, he played with erector sets, launching his ambitions to become a structural design engineer. At nine, he started building his first car, gathering parts for a 1936 Ford. At 10, the young wizard set out to create a hot rod that he eventually drove to school when he came of age to have a driver’s license. He laid his hands on an engine at 13 and rebuilt the motor. Idleness was never part of his personality.

Much later in his life, he would take his engineering skills and compete professionally as a racecar driver, reaching top speeds of 180 to 200 miles per hour on the nation’s major tracks such as Watkins Glen, Virginia International Raceway, and numerous California settings. “Racing is good for the heart, and clears out the mind,” says the 1972 graduate of Virginia Tech’s civil engineering department. And, it helps to “have a preservation gene,” he smiles.

Virginia Tech was fortunate to attract this entrepreneurial personality to its campus. Mr. Myers had first considered Georgia Tech, in steep geographical contrast to his parents’ preference that he attend the nearby Lehigh University. “Lehigh was too close to home for me, and my father said Georgia Tech was too far away. So, with typical engineering minds, we drew a circle and it landed on Blacksburg. Then my guidance counselor told me Virginia Tech was a good school,” he recalls.

He started losing some of his self-described “geekiness” as a college student, becoming one of the founders of Sigma Phi Epsilon, the first national fraternity at Virginia Tech. “It was fun building this from scratch. We raised the money, bought a house, lived in it, and even hired a cook,” he recalls. “I met a great bunch of friends who I have had for the rest of my life, including John Lawson (currently the Rector of Virginia Tech’s Board of Visitors).”

His new-found proclivity towards a social life was mixed with a steady co-operative education experience. He found positions during alternating academic
it's no surprise that Mr. Myers is one half of the key leaders prepared to elevate an industry," Mr. Myers says.

Mr. Myers and his fraternity brother, Mr. Lawson, II, shared equally in a $10 million gift to start the school. Mr. Lawson is the president and CEO of W.M. Jordan Company, Inc., headquartered in Newport News, and the largest construction company based in Virginia.

“My investment in Virginia Tech's School of Construction is providing the industry, including companies like mine, with much needed, well-prepared, high content human capital. Beyond that, I believe the school is elevating the learning process to produce leaders prepared to elevate an industry,” Mr. Myers says.

“I always felt our construction industry, about 10 percent of the Gross Domestic Product of the country, is an unrecognized field. To return to Virginia Tech and to be able to start the school with John was a way to give back to both Virginia Tech and the industry. It is as exciting as it can get, especially to come down and meet the students. When people have passion, good things happen," he smiles.

The Myers-Lawson School of Construction, approved by Virginia's State Council of Higher Education in 2006, might never have happened if the two had not become life-long friends and fraternity brothers. “Virginia Tech defined me as a person,” Mr. Myers says. “They were five of the most formative years of my life. Virginia Tech really preached Ut Prosim, and as a young person, I believed in the Honor System, lived by it, and was proud of it.”

Mr. Myers’ emphasis on education at American Infrastructure allows him many personal rewards. “I marvel at how good the people in our research and development are. When people do it better than I could have ever done it, and I see that a lot, it gives me goose bumps, and is my greatest reward," he says.

Mr. Myers has been married to his wife Beth for the past 20 years. They are the parents of six children, and they enjoy family skiing vacations. Members of Virginia Tech’s Ut Prosim Society, he is also a former member of the Advisory Board of the Via Department of Civil and Environmental Engineering.
Charles G. O’Brien
Industrial Engineering; BS, 1956

Charles O’Brien grew up in the 1930s during the Great Depression in a town that no longer exists. Dan River Cotton Mills owned his village called Schoolfield. His frugal but happy childhood experience helped him turn into the generous philanthropist and volunteer he is today.

The boy who started out living in a two-room house is now retired with two homes, and has spent much of the past 12 years since his retirement continuing to donate his time and talents. He has traveled to Ghana, Slovakia, Russia, Bulgaria, Poland, Ukraine and Honduras, lending his expertise to help with the privatizing of manufacturing facilities and aiding in disaster relief. The volunteer assignments were coordinated through the International Executive Service Corps, the Citizens Democracy Corps, and the Episcopal Diocese of North Carolina.

O’Brien’s transition from working in a textile plant making minimum wage to an international management expert came through his own initiatives. He planned his “escape” from the mill as a teenager. Although the mill was good to the community, funding recreational facilities and athletic teams for students and housing for families, he knew he wanted a better career than this village (that would eventually become part of Danville, Va.) could provide. So in 1948, at 17, he enlisted in the U.S. Navy.

For the next four years he served as a U.S. Navy patrol bomber air crewman, and took advantage of the military’s electronics school. In 1952, the savvy young man left the Navy and used the GI Bill to pay for his industrial engineering education at Virginia Tech.

The military veteran became a member of the Virginia Tech chapters of Alpha Pi Mu and Tau Beta Pi, the industrial and engineering college honorary fraternities. He joined the German Club and was a member of the Civilian Student Government. “I learned an invaluable lesson at Virginia Tech that one of our responsibilities is service. The German Club especially encouraged this.

“Virginia Tech has since influenced me throughout my life. There is no one who loves Virginia Tech any more than I do, nor is there anyone who owes Virginia Tech any more than I do. My satisfaction in my field of work is due to Virginia Tech,” O’Brien says with passion. And it was at Virginia Tech that he met his bride, Betsy Kenney, with whom he has recently celebrated his 50th anniversary.

When O’Brien graduated in 1956, an engineering diploma was a hot commodity. From a variety of choices offered to him, he deliberately selected one of the lesser paying jobs with Armstrong World Industries because it would allow him to work with people and become a management trainee. O’Brien worked his way up the corporate ladder, starting as a foreman and ending as the Executive Vice President of Thom-
asville Furniture Industries in North Carolina, a company with 6,500 employees at 21 plants in four states.

Although O’Brien himself never built a piece of furniture, he had an admiration for the process. “Rough lumber would come into the plant and out would go a beautiful piece of furniture. And I really enjoyed North Carolina where there was a very strong work ethic.”

His concern for his employees over the years is reflected in these comments. “My most challenging times came when business was poor and there was a need to lay off people or shut down plants. We had to deal with the effects on families. I always tried to make decisions based on what was best for the majority of the people, and then try to help them bridge the gap, possibly through opportunities for job training or other transitions,” O’Brien says.

He probably understood these types of hardships more than others, as his own parents never finished high school. But through hard work and diligence, his father went on to earn a general equivalency degree and later became group manager of five textile mills in Canada. “Dad was always thankful and loyal to the company,” his son recalls.

With his background it’s not surprising that his most satisfying volunteer work was in helping companies in Eastern bloc countries transition to the free market. “I would start with very basic principles. For example, in Bulgaria, I began with writing job descriptions, setting goals and objectives, and establishing pay differentials,” he explains. “We worked on plant layouts, production processes, work methods, production measurements, quality control, warehousing, marketing and distribution.” He remains in contact today with the folks he met some six years ago.

His Russian experience was particularly challenging. Only one person spoke English in the plant where O’Brien volunteered. And even more unusual: furniture designs for local companies had to be approved in Moscow.

At Virginia Tech, the O’Briens are members of the Ut Prosim Society. He is a past recipient of the Industrial and Systems Engineering Department’s Marvin Agee Distinguished Alumni Award. He is a past member of both the ISE and the College of Engineering’s Advisory Boards. He is already a member of the ISE Academy of Distinguished Alumni.

At 75, O’Brien has slowed down his volunteer work around the world, and now he and Betsy travel mostly between their homes in Blacksburg, Va., and in Pensacola Beach, Fla.

In his communities, O’Brien is active in the Presbyterian Church, and he is a past chairman of the Board of Directors of the Community General Hospital in Thomasville, N.C., the Thomasville Community Foundation and an elder in the First Presbyterian Church of Thomasville. He is also a former member of the Board of Directors of the Thomasville Furniture Industries, Thomasville Upholstery, Gordon’s Inc., and Fayette Enterprises. He is a past director in his community of some 16 different organizations including the American Red Cross, Rotary, Chamber of Commerce and the United Way.

O’Brien and his wife have two sons, Charles, Jr., (Coby) a graduate of Syracuse University, who is currently teaching and working on his doctorate in mass communications at the University of South Florida, and Christopher, a graduate of Rochester Institute of Technology, who is a free-lancer with the *New York Times*. 
E. Minor Pace
Mining Engineering
Class of 1943, BS

E. Minor Pace grew up as the ninth child in a “Cheaper by the Dozen” family of nine boys and three girls. It was the 1920s, and his father, who had only one month of official schooling to his name, operated one of the first automobile agencies in a rural area 16 miles south of Charlottesville, Va.

“Dad also made wagons,” for the horses that were still used for transportation at the time, Mr. Pace recalls today.

Money was not plentiful for the Pace family then, but Minor managed to catch a school bus daily to Scotsville High School on the James River. He mixed athletics and academics well, becoming the first member of his family to graduate from high school. But he did not just graduate—he was the valedictorian for the class as well as a three-year varsity letterman in basketball.

His strong high school performance insured his acceptance into Virginia Tech’s College of Engineering, his number one choice for a higher education degree. Although electrical engineering attracted his immediate interest, he soon learned that the mining engineering program offered numerous opportunities for its students to gain lucrative employment in the summer. He had waited tables his last three years, but this part-time job was in no way equivalent to the $7 an hour he could make in the early 1940s working in a coal mine. He also worked 60 hours a month for the National Youth Administration.

“I rather enjoyed working underground with the union members of the Pittsburgh Coal Company,” Mr. Pace says. “The company was looking for future managers, and they looked at the internship as giving us vocational training. I also looked forward to it because it was good money. Tuition was only $40 a quarter back then,” and with six hours of work in the mine, he had it paid for.

The young cadet also found that hitchhiking in those days was easy. No one questioned picking him up when he wore his uniform. So getting rides to and from Blacksburg to his home or to Pennsylvania was not a problem. And during the summer when he worked in the mines, he lived as a boarder with a family who provided him with his meals.

Mr. Pace officially graduated with the Class of 1943, but with World War II calling every able-bodied young man into action, VPI, as it was then known, gave him his degree a quarter early so he could enter Fort Belvoir for his officer training. As he was about to embark on his military tour of duty, he married his sweetheart Helen in a ceremony at the Blacksburg
Episcopal Church, and brought her with him. Helen, a graduate of Harrisonburg State Teachers College, taught elementary school back in Scotsville where Minor had attended high school. “She had bought a car, and I had to teach her how to drive it,” he smiles, recalling how their relationship “started 67 wonderful” years ago.

Shortly after their marriage, he left for several years. He traveled to the Pacific with the 1896th engineering aviation battalion attached to the 5th Air Force, building and maintaining airstrips in New Guinea. He was discharged as a captain in 1946.

As he looked around for employment, Inland Steel Company needed a surveyor in its engineering department. “The job paid better than the mining companies were offering at the time,” Mr. Pace says. But his degree soon came back into play as Inland asked him to take over the building of a new coal preparation plant. Soon after his success with this position, the company named him superintendent of mining.

When Inland discovered one of its properties in West Virginia had mines with some serious ventilation problems due to the gases inside, the company gave the project to Mr. Pace to solve. He went to the University of West Virginia to study with experts on the matter, and instead decided to become an expert himself. He talked the company into letting him get a master’s degree, a commitment that would only take him 10 months. He secured his master’s in Mining Engineering (MinE) by 1948.

Ironically, Inland sold the mines before Mr. Pace could apply his new knowledge. So instead, he later used his expertise to teach ventilation courses part time at the University of Kentucky. “I enjoyed teaching. It seems to run in the family,” he says. In addition to his wife’s career, his youngest brother became the superintendent of the Falls Church School System in Virginia, while his brother, Emory, retired as an associate professor emeritus of mathematics from Virginia Tech.

As Inland grew, with properties in three states, it became the Inland Steel Coal Company. Mr. Pace worked his way up the ladder to executive vice president, earning a reputation for modernizing the company and improving its profit margins. By now, he was also a graduate of the Harvard Business School’s Advanced Management Program.

While with Inland, Mr. Pace served as vice chair of the Kentucky Coal Institute, chair of the Illinois Coal institute, chair of the Coal Division of the Society of Mining Engineers, and as a member of the Board of Directors of the Society of Mining Engineers (SME).

He received two national awards, SME’s Percy Nicholls Award, and the American Institute of Mining Engineers’ Erskine Ramsay Award, for his contributions to the industry. He also received the Distinguished Engineering Award. Among his numerous impacts, he worked with Inland’s research department to break coal into uses for steam and metallurgical needs. Mr. Pace also helped bring about a process for furnishing coal that was low in sulfur content to power companies.

In 1980, Mr. Pace retired from Inland Steel after working 34 years. He remained active with Virginia Tech, saying he “gives credit for his success to VPI.” As he was retiring, Paul Torgersen asked him to join the College of Engineering’s Committee of 100 as a charter member. In 1986, Mr. Pace received the Distinguished Alumnus Award from the Virginia Tech MinE department. He also is a member of the university’s Caldwell Society.

He’s been active in various communities in which he has lived. He has received a Silver Beaver Award from the Boy Scouts of America, served on fire and police commissions, city council, director of the hospital board, YMCA, bank, and vice chair of the board of Pikeville College. He also has served on several positions in the diocese of his church.

The Paces currently reside in Mount Vernon, Ill. They have three children: Kerry Pace of Aurora, Ill.; Kim Pace of New Port Richey, Fla.; and Kirk Pace of Belleville, Ill.
Retirement can often mean an entirely new chapter of life is about to begin, and in Don Pemberton’s new adventure, his 38-year highly successful materials engineering career is returning him to a different kind of artistry, painting landscapes and historic old houses as a member of the Rivah Country Painters, a group of artists who live primarily in Virginia’s Northern Neck and middle peninsula area.

Mr. Pemberton first picked up his skills with watercolors as a young boy of about 12. He never forgot his creative talents, using them instead as a materials scientist throughout his career. He spent almost four decades with the Reynolds Metals Company, retiring in 1992. While Mr. Pemberton was at the Fortune 500 company, he worked his way up to director of engineering and technical services, supervising 40 engineers nationwide. His group had responsibility for all facets of the aluminum production, including metallurgy, fabrication, welding, structural needs, and surface finishing. At a company like Reynolds Metals, this job description says it all. Mr. Pemberton’s group was the backbone of the engineering needs of Reynolds Metals and its customers.

Retirement has now allowed him to return to his original craft, and he has joined the local artisans group and, as he says, “occasionally sells a few,” including a series of his renderings of older homes. He probably rightfully assumed in the late 1940s that he could never make more than a modest income from his painting, so he elected to study electrical engineering. Mr. Pemberton’s road to a successful career is a familiar tale to so many of the students who went to Virginia Polytechnic Institute in the 1940s and 50s. An only child, Mr. Pemberton grew up in the Carytown section of Richmond, attending Thomas Jefferson High School. His father who wanted to become a doctor, did not have the financial means to attend college. Instead he selected the professional trade of electrician, fortuitous for his young son, Don. As a boy, Don would often accompany his dad and mentor on jobs, and as he recalls, “picked up the tricks of the trade.”

So, when it was time for him to consider becoming the first college graduate in his family, Mr. Pemberton elected to study electrical engineering at VPI’s extension campus in Richmond. The two-year option had a pre-engineering program, and he was able to save money by living at home. He was also able to secure employment at Virginia Power, now known as Dominion, in its design department sub-station.

By the time he arrived at the Blacksburg campus to start his junior year, he was getting his education in reverse. He had a fair amount of practical knowledge
under his belt, and now he was learning the theory behind it. “I felt like I had been there and done that,” Mr. Pemberton smiles. “As a result, I was probably not the best student … and I found myself adopting materials engineering.”

While at Virginia Tech, he was also a member of the Naval Reserve. He had joined the Cadet Corps at his high school, a group he felt he could “bond with.” His father had been in the Navy in World War II, so his choice of the Naval Reserve was a natural progression. However, the Korean War caused a call-up of his unit, and he left his university studies for two years, assigned to the Atlantic fleet.

Returning to Blacksburg in 1954, he knew he was behind in his course work, and catching up was slightly difficult due to the scheduling of classes, as some were offered only once a year. So, with a little bit of time on his hands, he took additional training in industrial and materials engineering, broadening his skill set.

A member of the Class of 1952, Mr. Pemberton was unable to graduate until 1956, similar to so many of the biographies of the World War II and Korean veterans who received their engineering degrees at Virginia Tech. Military service was an accepted part of life, and the delays in education were routine at that time.

After receiving his baccalaureate, Mr. Pemberton’s decision to join Reynolds Metals came after looking at a number of companies. Reynolds Metals “seemed to be progressive in the development of new products, and although it did not have a huge need for electrical engineers, it did have an opening for a maintenance foreman at its plant near Petersburg,” he recalls.

His initial job lasted two years. Then, he transferred to the company’s main headquarters in Richmond. However, he traveled throughout the U.S. to design the electrical components of new manufacturing facilities. “The position gave me a good feel for the entire company,” Mr. Pemberton says.

But after four years, he was within a stone’s throw of leaving the aluminum giant for a position with General Dynamics. However, as he was considering his options, a job opened at Reynolds Metals in sales engineering where he would be able to work with customers to develop products. Recalling his artistic beginnings, he liked the creativity that came with this position, working on new concepts and novel alloys. “I started to realize how much I enjoyed materials and applications,” Mr. Pemberton says.

From 1981 until 1992 he worked with Reynolds Metals research division to test concepts. Among the novel ideas that went through his group was an outer aluminum housing for electric motors that dissipated heat better than the heavy cast iron one that was then in use. Another problem his group tackled was a replacement for copper as an electrical conductor. “There was a definite advantage to aluminum materi-
Don M. Powers
Electrical Engineering
Class of 1959, BS

Don Powers knew he wanted to be an electrical engineer from an early age. “My father was an electrical repairman of mining equipment in the mines,” Mr. Powers says of his rural Southwest Virginia upbringing. “He was always talking about it and working with it and interested in it, and I guess it rubbed off on me. When I decided I had to go to college to get an education that was the foremost thing in my mind.”

After a stint in the military, Mr. Powers opted for Virginia Tech. Where some people can point to a mentor or a professor setting them on one life path or another, Mr. Powers well may owe his career to a magazine article in an electrical engineering student magazine. The article was on the use of binary numbers in computers.

Intrigued, Mr. Powers wanted to learn more about this then-burgeoning science. A professor directed young Powers to a Virginia Tech electrical engineering alumnus who had a “very good job” at a company called IBM. “I was told, ‘Why don’t you write him,’ and ask for a summer job, and I did,” Mr. Powers says.

The summer job led to a full job in Poughkeepsie, N.Y., after his own 1959 graduation. At IBM – the computing giant once known as International Business Machines – Mr. Powers helped grow the firm into one of the world’s technology giants during a 28-year career. “Those were the glory years,” Mr. Powers says. “That was one of the most exciting industries in the business when it was forming and growing and becoming what it is to today.”

Mr. Powers’ resume reads as a near-history of IBM’s powerful run in large mainframe computing. The change to mainframe computers was revolutionary. His first assignment was for the National Security Agency, on a mainframe that was powered by thousands of transistors and employed magnetic core memory. The room that housed the machine and the peripheral equipment was the size of a football field, with a raised floor to hide the cable connections and conduct the flow of cooled air to remove the heat. The equivalent collective computing power of that machine can be found on a single desktop today.

During his career, he was involved in the design and development of System 360 and System 370. Later he served as product manager for the Model 308X series. He was the manager of the IBM Kingston Development Laboratory, developing software and hardware for large computer mainframes when IBM offered an inviting retirement program.

In 1987, Mr. Powers took advantage of an offer, and retired from IBM. But he didn’t retire. Instead he moved from Poughkeepsie, N.Y., to Minneapolis,
Minn., and took a position at Control Data Corp. as vice-president of development and research. After a few years of redirecting the computer group, it was decided that the subsidiary parts were more financially viable and profitable than the whole. Mr. Powers was tasked with running another unit, Empros Systems International, which built transmission control systems for power companies. There, Mr. Powers increased new orders from $40 million to $100 million in 1991, and increased profit margins fivefold. Two years later, the firm sold to Siemens, and Powers retired for good.

His impact on the computer engineering field remains strong. Patents and research he pioneered in the early 1970s are still referenced in research papers as recently as 2004. He also served four years each on the advisory boards of the Virginia Tech Electrical and Computer Engineering Department and the College of Engineering. Those in the field still point to his successes.

“His resume is shockingly, shockingly powerful. He was basically at the tipping point of powerful computer electronics,” says Jim George Jr., a fellow Virginia Tech alumnus and Academy initiate who spent his career at Motorola. Mr. George adds that his colleague’s work helped grow IBM to the technology powerhouse it is today. “They have never given that up. They’ve always remained a leader.” F. William Stephenson, former head of the Virginia Tech Electrical and Computer Engineering Department and once dean of the College of Engineering, adds: “He really doesn’t talk much about his achievements which, quite frankly, are astounding.”

For his part, Mr. Powers puts his successes on the shoulders of a higher power. “Looking back, I see the Lord was directing me on a certain path.” He adds that those small actions – reading a magazine, writing a letter, taking a summer job – all happened for a reason, “planned by God.” Now retired in Lynchburg, Va., Mr. Powers demonstrates his faith through active participation in his church.

He also remains hooked on computers. He has owned a desktop computer continuously since 1983. “I use Photoshop on it. I also spend a fair amount of time on the Internet. I keep finances on it, play games on it,” he says. He also reads articles in such publications as Wired on the latest computer technology breakthroughs. Knowing how far the computer field has come, he continues to be amazed at the advancements.
Haller G. Prillaman
B.S., Industrial Engineering, 1955

Haller G. Prillaman has never strayed far from his roots. Born in Martinsville, Va., some 70 years ago, he continues to live in the southside community today. He is a well-respected businessman and civil leader who was named Virginia's Volunteer Economic Developer of the Year in 1999.

His affinity for Virginia Tech developed while he was in high school. As a senior, he built a Geiger counter for a design competition. The contest judge, the Department Head of Virginia Tech's Electrical Engineering Department at the time, summoned young Hal for a meeting, and he thought he was in trouble. Instead, as Mr. Prillaman recalls today, "Professor Murray said, 'Son, I'd like for you to come to Virginia Tech and study electrical engineering.' I was surprised. I thought I had done something wrong. But I had won first place."

Dr. Murray's invitation was well-received but as Hal reviewed the University catalog, industrial engineering (IE), not EE, peaked his interest. More of these courses addressed business and management issues where he had his strongest interests. "IE challenged me," Mr. Prillaman says, "and my membership in the Corps of Cadets kept me busy. He did find time to participate in the Honor Court, the American Institute of Industrial Engineers, and for fun, dance lessons.

When he graduated in 1955, he started his career as an IE for the Celanese Plant in Narrows, Va. He worked on various projects to improve its manufacturing of acetate fiber. He spent enough time in the community to meet his wife, Wanda, the daughter of the local police chief. But in 1957, he was called to active duty in the U.S. Army. Given the option to enter the reserves, he spent six months at Aberdeen Proving Grounds, and then he became a Captain in the Virginia National Guard and served until 1965.

In 1958 Mr. Prillaman returned to Martinsville to join his family's business. His father, one of Martinsville's former mayors, started the Prillaman Company, a specialty coatings manufacturer, in the 1930s. His older brother, Nick, a Virginia Tech 1949 chemical engineering graduate, was now running the business, and Hal served as the Vice President until 1960 when he became President of Prillaman Chemicals, a chemical distribution company.

Hal Prillaman grew his company to 130 employees who served predominantly the southeastern U.S. They serviced a wide variety of businesses as the company moved various chemicals from one location to another. For example, Prillaman Chemicals became one of the largest distributors of phosphoric acid since it was used in everything from soft drinks to cleaning products to charcoal.

Mr. Prillaman found a good niche for his company but he also knew chemical distribution was a dangerous business. "Our focus was on safety and the environment. Every company meeting started with these issues. Of course, we had to make a profit, but we also spent a lot of time making sure that what we did that day was good for tomorrow also."

In 1984 he sold the company to England-based Ellis and Everards, but retained the presidency for four more years. He also served on the British company's Board of Directors for the next four years. Owning his own company remained a family tradition so he and brother Nick started the Prillaman Brothers, an investment firm, in 1988. They continue to operate this Martinsville business on a part-time basis.

And, like his dad, Hal remains a prominent member of the community. In 1976 he became a founder and director of the Patrick Henry National Bank. In 1995 he was elected as a director of Mountain National Bank. He was a charter member of Martinsville's Human Relations Council, helping to guide the city in its integration process. For 15 years he was a director of the YMCA, and he is a past president of the Junior Chamber of Commerce. He spent 10 years on the Economic Development Council. "I walk in my father's shadow," he says modestly.

He is also active in the First Baptist Church, serving as a deacon and chair of the Board of Trustees. He has served as President of Forest Park and Chatmoss Country Clubs.

He remains active with Virginia Tech, serving two five-year terms on the Industrial and Systems Engineering (ISE) Advisory Board. He funded the Hal G. Prillaman Professorship in the ISE Department. He is a member of ISE's Academy of Distinguished Alumni, the College of Engineering's Committee of 100 and the University's Ut Prosim Society. He is a Golden Hokie with the Athletic Association (AA) and endowed an AA scholarship. "I always appreciated the education I received at Virginia Tech, especially in IE. I found that when I was President of my company, I needed to know about manufacturing but I also needed to know about accounting. Tech taught me a lot about management and about engineering."

The Prillamans have one daughter, Ann Hamre, who lives in Fort Worth, Texas, with their four grandchildren.
Dr. Charles W. Pryor, Jr.

Civil Engineering; BS, 1966; MS, 1968; Ph.D., 1970

If Charles W. Pryor Jr., had a motto, it might be for people to live their lives so that the world is a better place than when they entered it. Relatively few people could meet this altruistic goal, but the Virginia Tech civil engineering (CE) graduate is on his way.

Pryor is currently working on plans for the nation’s first state-of-the-art and cost efficient uranium enrichment plant. The plant will be located in Lea County, New Mexico and based on modern centrifuge technology.

Pryor, a 35-year veteran of the nuclear industry, remains optimistic that “future generations will harness their energy from the atom....I look to the day when a neighborhood will have electricity coming from small distributed atomic power sources,” not from poles and wires, he says. “People have the right to question nuclear power but it really is more of a political issue than a technical one,” asserts the president and chief executive officer (CEO) of Urenco, Inc., and Urenco Investments Inc. Urenco Inc., is the North American marketing arm of Urenco, Ltd., a global supplier of uranium enrichment services, delivering more than 13 percent of the world’s enrichment requirements.

Pryor, well known and respected throughout the global electric utility industry, has spent most of his career as a president or a chief executive officer. Prior to his Urenco position, he served as chairman of the Board of Westinghouse Electric Co., president and CEO of British Nuclear Fuels (BNFL) Utilities Business Group, president and CEO of B&W Nuclear Technologies, and chairman of the B&W Nuclear Fuel Co. He also operated a successful management consulting company.

A native of Lynchburg, Va., and a graduate of E.C. Glass High School, Pryor knew as a teenager that engineering would be his career choice. He enjoyed building structures, often going into the woods with some of his friends, cutting down trees and fashioning small cabins. One day his dad, an accomplished real estate broker, introduced him to a Virginia Tech alumnus, Martin Johnson, who was President of Willey and Wilson at the time. “Up until that time, I thought of engineers as wearing hard hats, blue jeans and boots, and supervising construction projects,” Pryor laughs. Instead he spent time that day looking at blue prints and examining a plush office by his teenager’s standards.

Choosing Virginia Tech was also easy for the young man. First, his uncle had attended the Blacksburg university due to the flip of a coin. His grandparents could only afford to send one of their sons to college, and his uncle won the toss. Second, he wanted to be a cadet, and he had admired a “great guy down the street from my home who wore the cadet uniform.”

During his undergraduate days, he spent his time on academics and developing leadership skills. He was inducted into three honorary societies: Chi Epsilon, Tau Beta Pi, and Phi Kappa Phi. He received the Sam Carson Award, given to the “Best Rat” in B Squadron. And from his sophomore year on, the only grade he saw on his report card was an “A.”

After earning his bachelor’s degree in CE in 1966, he was influenced by Richard Barker, now retired from the civil and environmental engineering (CEE) faculty, to pursue graduate school. He received a National Science Foundation Fellowship, one of only about six awarded at Virginia Tech in the 1960s. By 1968, he had his master’s and two years later, his doctorate in structural engineering. Pryor worked on Virginia Tech’s Themis grant, the University’s first major effort in composite materials. The military had started a program to develop high-strength, light-weight materials, triggered by the 1963 sinking of the USS Thresher, the lead ship of a new class of nuclear-powered attack submarines. The Themis grant is considered the starting point for Virginia Tech’s evolution into a world-class research university in advanced materials.

Using his skills learned while pursuing his Ph.D., the structural engineer started his professional career in 1970 with McDonnell Douglas Aerospace Co., where he was responsible for the development of composite materials and the use of boron-epoxy for the wing of the F-15 Air Superiority Fighter. Two years later, he returned to Lynchburg to join B&W, later known as Framatome, Inc. While at B&W, the company encouraged him to pursue an executive MBA from Northeastern University. This perk was provided to only a limited number of employees.

Pryor grew the B&W nuclear business into a successful player in the nuclear power market and led its divestiture to the French company Framatome. Now called Areva, the sale “allowed the French to get a beachhead in the U.S. which had the largest nuclear market in the world,” Pryor says. In appreciation, French President Francois Mitterrand presented Pryor in 1991 with the distinguished “Chevalier du L’Ordre National du Merite” for developing cooperative business relationships between the U.S. and France. Only four such awards are given annually, usually to French nationals. They were started in 1963 by then French President Charles De Gaulle.

In 1995 he started C W Pryor & Co., a successful management consulting firm, specializing in the teaching of core values of business leadership. His skills soon attracted the attention of Westinghouse’s Chairman Mike Jordan, who in 1997, recruited Pryor to become president and CEO of Westinghouse Energy Systems and Westinghouse Electric Co. Pryor was charged with transforming a then sluggish, poor-performing business with losses to a profitable venture. Within five years, his leadership led Westinghouse to become one of only three principal suppliers worldwide to the nuclear utility industry.

In April of 2002, Pryor became president and CEO of BNFL Utilities Business Group and chairman of the board of Westinghouse Electric Co., a supplier of nuclear fuel, nuclear services, and advanced nuclear plant designs to utilities operating nuclear power plants. Based in London, Pryor streamlined the company’s operations and improved productivity by more than 20 percent. He remained in this position until he joined Urenco in October of 2003. With Urenco, Pryor hopes to witness the first modern uranium enrichment plant break ground in August of 2006 in New Mexico. “This will be the first such plant built in this country in over 30 years, and I am happy to be associated with it,” Pryor says.

Pryor is an active member in his community as well as at Virginia Tech. Among his previous activities, he served as chair of the Central Health Corp., of Lynchburg, president of the Lynchburg Chamber of Commerce, director of Virginia’s Center for Innovative Technology, director of regional development for Allegheny County, Pittsburgh, Pa., and on the Board of Trustees for Lynchburg College and Central Virginia Community College. He received the 1993 Outstanding Industrialist of Virginia Award. He was recently elected to the National Academy of Engineering list.

At Virginia Tech he is a member of the Foundation Board, the Ut Prosim Society and the Committee of 100. He is a past member of the CEE Advisory Board and the Corporation and Foundation Major Gifts Committee. He and his wife Mary Jane established the Charles W. Pryor, Jr., Endowed Scholarship in Engineering and a second one in athletics.

They have three sons and one daughter and reside in his hometown of Lynchburg.
Michael J. Quillen
Civil Engineering, Class of 1970, BS
Civil Engineering, Class of 1971, MS

For more than 40 years, the alarm clock in Mike Quillen’s bedroom would announce 4:45 a.m., an irrational waking hour to most. His long work days, regularly exceeding 10 to 12 hours, were complimented by maybe taking a single week of vacation time in any given year, even when he was accruing the right to take as much as a month off. The man who started earning money as a gravedigger at the age of 13, and who was able to attend the civil engineering program at Virginia Tech with the help of a partial scholarship, has never lost his work ethic, even in retirement.

His robust professional reputation was built through his lengthy career with the mining industry, often working in the deep pits side by side with the operators. His successes led to numerous accolades from his fellow miners to most recently being named the 2011 Virginia Business Person of the Year.

The latter award was due in part to his founding of Virginia-based Alpha Natural Resources (ANR) in 2002 after spending 28 years in mining related positions. Quillen knew just about all of the key players from his various executive vantage points, as his titles had ranged from chief operating officer of the Eastern Coal Group of W.R. Grace and M.A. Hanna, to executive vice president of sales and marketing and president of Pittston Coal Sales for the Pittston Coal Co., to executive vice president of operations of American Metals and Coal International. Impressively, he was only 31 when he was named president of Paramount Coal Company of Wise, Va.

So by the time he founded ANR at 52, Quillen’s acumen led the company to its ranking as one of the nation’s largest coal suppliers and the number six coal supplier worldwide within ten years.

To achieve ANR’s sterling international status, Quillen first acquired the Virginia coal operations of Pittston Coal Company, followed by the Coastal Coal Company and the coal production and marketing operations of American Metals and Coal International. Next ANR added Mears Enterprises, Inc. In 2004, Moravian Run Reclamations Co., Inc., became part of ANR, as did several entities of the Cooney Bros. Coal Company. In 2005 ANR acquired the Nicewonder Coal Group, followed a year later by certain coal mining operations in eastern Kentucky from Progress Fuels Corp. In 2008 ANR assumed ownership of some of Arch Coal Inc.’s mining assets, and in 2009 it completed a merger with Foundation Coal Holdings Inc. In 2011 Massey Energy Company folded into ANR.

In spring of 2012, Quillen formally retired as chairman of ANR, a company traded on the N.Y. Stock Exchange, but still based in southwest Virginia – Quillen’s home for 63 years. He fills his days differently now, with only some of his time devoted to ANR where he maintains an office, or to the four coal mines in which he has ownership interest in Australia. But he has also been busy with his gubernatorial appointment as chair of the Virginia Port Authority Board of Commissioners (he stepped down from
He acquired 160 acres of land near Abingdon, Va., that he is considering placing in a conservation easement with the Nature Conservancy.

“I am adjusting to getting up at 7 a.m. real well,” Quillen quipped. “I have walked almost every inch of the 160 acres, finding the time very peaceful,” except maybe when he stumbled upon a snapping turtle or a coyote, admitted one of the state’s leading philanthropists.

For the past 30 years, Quillen has donated money to a multitude of organizations, and continually picks out two or three a year where he can make a substantial impact. One of his retirement jobs is the co-chairman of an $8 million capital campaign for the historic Barter Theatre in Abingdon. And he was instrumental in Virginia Tech’s most recent development effort that earned the University status in higher education’s billion dollar endowment club. His family funded an auditorium in the Signature Engineering Building that will open in 2014.

Eventually, he hopes to create a family foundation, involving his wife, Debbie, and his children, in the administration of the Quillen family’s generosity.

Quillen’s zest for life started as soon as he entered this world. Shortly after he was born in 1948 he developed intestinal problems, and within days weighed only 32 ounces, the equivalent of a quart of milk. He defied the doctor’s limited expectations of his life, and today continues to look at every day “as a gift.” His early flirtation with death may help account for the emphasis he has placed on the safety of miners throughout his career and even after his retirement.

For example, in 2004, he led ANR in its opening of the “Running Right” program, where every employee is trained as a safety leader. The process also allows his employees to file anonymous statements about safety issues within the company. “Most accidents are behavior based,” Quillen said, and when an employee wants to do a good job, he/she “will often cut corners” to improve productivity. “They want to do good, but in the end the short cut may not be the right thing to do.” The unnamed cards help management define the safety problems.

And before he left ANR in 2012, Quillen was instrumental in the creation of the Alpha Foundation for the Improvement of Mine Safety and Health Inc., a non-profit organization with a mission to improve mine health and safety through funding projects by qualified academic institutions, not-for-profit entities, and individuals associated with those entities. Alpha is contributing a total of $48 million to the foundation.

When the 2010 mine explosion occurred at the Upper Big Branch, an operation owned then by Massey Energy Co., Quillen sent five of Alpha’s rescue teams to the scene within an hour of his learning about the disaster that would claim 29 lives. With litigation pounding at the doors of the Massey Company after this accident, Quillen led ANR in its acquisition of Massey Energy Company, and subsequently instilled the company’s safety-first philosophy.

In retirement, Quillen is counseling ANR in the development of its new safety leadership academy in West Virginia. To remain up-to-date with the industry, the Abingdon, Va., resident maintains his first-class mine foreman certification, taking an eight-hour course every two years. He adds that he also does it “out of respect” for the people who work in the industry.

“It used to be that miners had to be big and shovel fast. Now everything is very technical,” and different, expanded safety mechanisms are required, Quillen explained. As a current example, a huge machine, called a continuous miner that uses its giant steel bits to claw coal from slabs and grind it up, is operated by a single miner using remote control.

Quillen also continues in the mining business with his personal interest in the Australia mines and does consulting for his prior partners at American Metals and Coal International. He remains active at the other end of the mining process also – exportation. Virginia is the home of the Port of Hampton Roads, at the mouth of the Chesapeake Bay, among the world’s foremost coal-shipping facilities. With Quillen’s resume, it’s no wonder he was appointed a commissioner of the Virginia Port Authority in 2003, and was the only person retained on the Board by current Governor Bob McDonnell. The state’s faith in Quillen’s abilities quickly led to his appointment as the Board’s chairman.

“Our goal is for Virginia ports to continue to grow, be recognized, and generate economic opportunities for the Commonwealth,” Quillen said. In doing so, Quillen admits this position was “currently almost a full time job in itself.”

Combine the Port Authority demands with the huge issues he faces as the rector of Virginia Tech’s Board of Visitors and one wonders when he has time to walk his 160 acres. Quillen admitted he is “very engaged, very dedicated” regarding all aspects of the University, as are the other board members. As rector, he has spent many hours visiting with Virginia Tech personnel, from deans to faculty, to staff, to students.

“Higher education has significant financial circumstances to address and needs to make a transition. State assistance is not going to come back as we have known it in the past. Virginia Tech does not have the huge endowment of a University of Virginia or a Stanford. We need to step back and look at the model. Fortunately my previous position with the board was the chair of the finance committee. We could improve our finances if we were able to take more out-of-state students … but we remain dedicated to our land grant obligation.

“College boards need continuity. I am in my third year and I am learning every day,” Quillen, who is allegedly retired, said.

Among Quillen’s contributions to Virginia Tech, he is a past member of the College of Engineering Advisory Board and the Via Department of Civil and Environmental Engineering Advisory Board. He is a member of Ut Prosim and the Committee of 100. His family has also aided in the construction of the Inn at Virginia Tech and in funding the Quillen Academic Counseling Center in Lane Stadium for student athletes. The College of Engineering awarded him its Distinguished Alumnus Award in 2006.
Dr. Helen L. Reed  
Class of 1980, MS, Engineering Mechanics  
Class of 1981, Ph.D., Engineering Mechanics

On Helen Reed’s web page, under her photo, are the words: “Currently Teaching / My Hours: Open Door.” She may be the only engineering department head in the country with such a novel overtire to its university students, and at Texas A&M’s Top 10 aerospace engineering program that is no small offer. Being the second largest aerospace engineering department in the U.S., there are 628 undergraduates and 112 graduate students.

Students do seem to be the center of Reed’s academic life as close to 1,000 young minds have participated in extracurricular projects she has led over the last 14 years. And when she looks to the future, they are the primary focus of her upcoming goals. “I want to help our students realize their dreams and be leaders in the profession. The future is in very good hands with our young people,” she says.

She has led student activities including soda-can-sized “satellites” launched from amateur rockets, a sounding rocket launch, a Space Shuttle STS-105 experiment, moon buggy designs, several high-altitude balloon launches, four KC-135 microgravity experiments, and two major satellite programs launched with the Air Force. Her leadership of student activities has led to 10 national awards over the past 13 years, including three American Institute of Aeronautics and Astronautics (AIAA) Best Overall Design Awards in the Annual Buggy Moon Race in 1996, 1998, and 2003. Her student teams secured three first places at the annual student competition at the AIAA/USU Small Satellite Conference in 1994, 1995, and 1997. Also in 2003, she advised the Moon Buggy team that won the AIAA Crash and Burn Award for the Best Wreck, countered by the Frank Joe Sexton Memorial Pit Crew Award for ingenuity, resourcefulness, and leadership.

A 1984 National Science Foundation Presidential Young Investigator award winner, Reed is also a very effective researcher, recognized as a national leader in computational fluid mechanics with a particular emphasis on boundary layer stability and transition to turbulence, and in small satellite technologies with an emphasis on responsive space systems and autonomous rendezvous and docking. Most recently, her accomplished career led to her receipt of the 2007 AIAA/American Society of Engineering Education J. Leland Atwood Award, bestowed annually upon an aerospace engineering educator in recognition of outstanding contributions to the profession. She is presently a Fellow of AIAA, the American Physical Society, and the American Society of Mechanical Engineers.

Reed knew she wanted to become an engineer early in her life. Her parents were both mathematicians who worked at the Aberdeen Proving Grounds in Maryland. At 12, she watched John F. Kennedy’s dream of landing a man on the moon become reality. And she says that her “wonderful set of mentors” at Aberdeen High School also had an impact on her career choice.

She attended Goucher College, summer interned at NASA Langley Research Center, and graduated in 1977 with honors in mathematics in three years under the guidance of Professor Dorothy Bernstein. NASA Langley hired her as an aerospace
technologist to develop energy efficient aircraft. The chief scientist at the time, Dr. Werner Pfenninger, “was a terrific mentor to me and always challenged me. He strongly encouraged me to continue my education and pursue graduate school at Virginia Tech,” she says.

After a little more than a year, she acted on Dr. Pfenninger’s advice and took a graduate leave of absence. She moved to the Blacksburg campus in 1978 to work with Professor Ali Nayfeh, the world’s leading expert in perturbation methods. “It was a tremendous opportunity for me to learn and implement some very powerful techniques to solve problems,” she explains.

She was definitely one of the few women in a man’s world at that time in engineering science and mechanics (ESM) but “I found a collegial environment with the faculty and my graduate student peers.”

Similar to how she streamlined undergraduate curriculum, she earned her master’s degree in 1980 after two years and her Ph.D. the following year. Stanford University was quick to note a qualified woman on a fast career track, and hired her as an assistant professor of mechanical engineering in 1982. Again, she says she found “a very welcoming” community with “great mentors.”

When President Ronald Reagan signed the authorization for the first year of National Science Foundation Presidential Young Investigator (NSF PYI) awards, her name was on the list of the inaugural recipients. She used the award money to start building her own program in stability and transition, research areas that had applications in reducing drag on aircraft, thereby increasing their fuel efficiency.

In 1985 in the middle of her quest for tenure at Stanford, Arizona State University (ASU) persuaded her to cross the state line, awarding her the title of associate professor, with tenure coming three years later. By 1992 she was promoted to full professor.

ASU had an excellent engineering program dedicated to bringing in young and promising people, and Reed found herself to be among the selected. Her work with students blossomed at ASU, where she pioneered new modes to promote systems engineering, interdisciplinary teamwork, communication skills, and familiarity with government and industry practices through the provision of various real aerospace projects including two major satellite programs with the Air Force. “Students thrive in an environment created around a real-world program relevant to national needs (such as a space program) in which research results are transformed into hardware and then tested,” she explains. She goes on to say that in her lab, students from many different disciplines and experience levels (from freshmen to graduate students) team to research, design, build, and launch or operate low-cost satellites and other space systems. In the process they learn the cradle-to-grave process of design including requirements, testing, safety, deadlines, documentation, and reviews.

Satellites designed and built by her students have been launched into space in partnership with the Air Force. In 2000 Orbital Sciences launched ASU’s 13 pound nanosatellite ASUSat1 on the inaugural Minotaur mission. In 2004 the work of Reed and her students culminated in the launch of two of the three Three Corner Sat microsatellites as a constellation on the Boeing Delta IV Heavy Demo. Their third satellite “Petey” is on display at the Smithsonian. “What an honor to see students’ hard work and innovation selected for flight and then for the National Air and Space Museum collection,” she says.

Complimenting her move into the aerospace department head’s position in 2004 at Texas A&M, she has continued her emphasis on students, creating the AggieSat Lab Student Satellite Program with additional satellite launches planned, including an eight-year, four-mission campaign with NASA Johnson Space Center to demonstrate autonomous rendezvous and docking technologies. Another potential mission with the Air Force aims to demonstrate a stereo-based relative navigation system.

Her AggieSat Lab is currently conducting research into and implementing small satellite platforms for testing unconventional software and hardware design architectures and methodologies to advance responsive space missions. The lab has also developed an Integrated Concurrent Engineering capability, called Team AggieSat, that incorporates a real-time collaborative process in which a multidisciplinary team of students approaches each design or analysis problem through the use of network-linked analysis and business tools. In addition a multidisciplinary Junior Engineer/Senior Engineer Certificate Program is in place aimed at promoting creativity and increasing productivity within an academic environment. The emphasis is on exposing students to all underlying aspects of spacecraft engineering, systems engineering, communication, management, and leadership. “It’s like a company,” Reed explains.

The impact of Reed’s work is now extending into unmanned aerial systems (UAS) and micro-aerial vehicles (MAV), as she is migrating many of these same concepts of rapid design and deployment there.

Reed is also very active and recognized as a leader in the area of boundary layer stability and transition. Accurate transition prediction is acknowledged by all in the aerospace profession as an enabler for flight over a wide speed range from high-altitude UAS to hypersonic trans-atmospheric vehicles, yet current transition prediction models are often highly empirical resulting in large uncertainties in aerodynamic drag and heating requirements. As a computational person, she has effectively interfaced with experimentalists and led in tool validation resulting in effective control methods.

The move to Texas A&M, in many ways, was very special and made Reed feel closer to Virginia Tech. “Texas A&M Aerospace Engineering and ESM feel like sister departments. Twelve of our faculty are either alumni or taught at Virginia Tech – with all but two from ESM,” she says.

She adds, “Aerospace is very important to the state of Texas. All of the major aerospace companies have a presence here.” And she often has the opportunity to visit the NASA Johnson Space Center with her students, and “if I am in the old Mission Control room, I still tear up watching the footage of our landing on the Moon. It’s a very emotional experience for those of us who grew up with the space program,” she says. “And today’s young people are talented and creative, and I am confident they will successfully carry us to even further heights in the future.”

When Reed heads home in the evenings, she has four horses, three dogs, and a barn cat eagerly awaiting her arrival. She and her husband, William Saric, also a professor of aerospace engineering at Texas A&M, manage a 92-acre farm dedicated to agricultural use.
W. Thomas Rice  
1934 Civil Engineering

In 1930, at the beginning of the Great Depression, an Episcopal minister recommended to Mrs. Alfred I. DuPont that she provide a college scholarship for W. Thomas Rice, a young man from rural Virginia. Proving the minister and Mrs. DuPont wise in their decision to help the aspiring student, Tom Rice graduated from Virginia Tech in 1934 with the highest academic average in his civil engineering class and was one of only two seniors in his class of 200 to be offered a job upon graduation.

That job was with the Pennsylvania Railroad, which he left to serve in the U.S. Army during World War II. He served with distinction in both the European and Pacific theaters of the war and was awarded the Legion of Merit with two Oak Leaf Clusters.

After the war, Mr. Rice stayed in the Army Reserve, from which he later retired as a Major General, and he also returned to the railroad business, working for the Richmond, Fredericksburg and Potomac (RF&P) Railroad. Within nine years, he was elected President of the RF&P and, two years later, he became President of the Atlantic Coast Line Railroad Company (ACL), which merged with the Seaboard Coast Line Railroads in 1967. Mr. Rice was elected Chairman and Chief Executive Officer of the Seaboard Coast Line Railroad Company (SCL) of Richmond and its holding company, Seaboard Coast Line Industries, in 1970. He also became Chairman of the Louisville and Nashville Railroad Company.

In the midst of his formidable military and railroad careers, Mr. Rice was awarded honorary doctorates in military science from The Citadel and in law from Stetson University.

After his retirement from the railroads in 1977, he was instrumental in the important merger of the SCL with the Chessie System, Inc., to form the CSX Corporation. In tribute to Mr. Rice’s contributions to the railroad industry, CSX endowed the W. Thomas Rice Professorship in Civil Engineering at Virginia Tech.

Mr. Rice has been a director on the boards of several industries including RF&P, Florida Rock Industries, Ambase Corporation, Tredgar Industries, and Chemical Bank of New York. An active civic leader, he has served as a trustee of the Virginia Episcopal Seminary, and also as a trustee of the Westminster-Canterbury Home for the Aging in Richmond, Va., and was named the Trustee of the Year in 1991 by the American Association of Homes for the Aging. He was a member of the Virginia Chamber of Commerce, the Advisory Board of The Citadel, and Virginia Military Institute’s Board of Visitors for eight years.

His extraordinary service to Virginia Tech includes eight years on the Board of Visitors and a term as Rector. During the past decade, he has endowed four scholarships for members of the Corps of Cadets who major in engineering. He has served as Director of the Virginia Tech Foundation, President of the Alumni Association, a charter member of the Rowe Fellow Program, and a member of the College of Engineering Committee of 100, Ut Prosim Society, Corps of Cadets Alumni Board, William Preston Society, and several other university organizations. In recognition of his contributions, Virginia Tech presented Mr. Rice with the Alumni Distinguished Service Award in 1973, the Engineering Distinguished Alumni Award in 1980, and the William Ruffner Medal in 1981.

In 1995 the Robert E. Lee Memorial Association awarded Mr. Rice the Lee Integrity Award at Stratford, Va., the birthplace of General Lee.

Mr. Rice and his wife of 63 years, Jaqueline, reside in Richmond, and they have a daughter and a son, seven grandchildren, and nine great-grandchildren.
F.D. “Red” Robertson

B.S. 1956
Owner, The Eagle Companies

Franklin Delano “Red” Robertson is known “as one of the most successful, effective and innovative coal operators in the country,” according to Mike Karmis, Virginia Tech professor of mining and minerals engineering. “A mining engineer, an attorney, and a business entrepreneur, Red has started a number of businesses, been involved in mergers and acquisitions that have included major international companies, and has served on several boards.”

Since 1985, Mr. Robertson has served as an owner, officer, and director of The Eagle Companies. This group of companies has been involved in mining operations in Virginia, West Virginia, Ohio, Illinois, and Alabama. Since 1967 he has also served as partner “of council” with the law practice of Robertson, Cecil & Pruitt in Grundy, Virginia.

Mr. Robertson started his career in the mining industry in 1956 with the Ames Mining Companies, one of the last independent coal operators in southwest Virginia. In 1960, he became a partner in the Thompson and Litton Engineering Company and remained with that company until 1967. From 1972 until 1985 he was an owner, a board member, and a corporate officer of the Knox Creek Coal Corporation, which was eventually sold to Republic Steel. One of his partners was another Virginia Tech alumnus from the Mining and Minerals Engineering Department, Jack Lester (Class of ’57).

Mr. Robertson continued expanding his coal interests in Virginia, West Virginia, and Illinois in partnership with other well-known coal operators, including Don and J.D. Nicewonder, Omer and Jim Bunn, Bill Kilgore (Class of ’57), and Buck Harless. He and his partners acquired in 1994 the Agip Coal properties, which they successfully operated until 1997 when they sold the operations to Ruhrkohle, a major German mining company. Mr. Robertson has many other business interests, including the mining of a significant limestone deposit in Alabama.

Most recently, Mr. Robertson was inducted into the Buchanan County Hall of Fame. The award was presented to him by retired Circuit Court Judge Nicholas E. Persin who described Red Robertson as a man who liked to accomplish things quietly without a lot of fanfare. Judge Persin added that Mr. Robertson had helped a significant number of young people in the southwest Virginia area, and he never sought a personal reward or recognition for his endeavors.

Mr. Robertson is a 1956 graduate of Virginia Tech with a degree in mining engineering. While he worked at Thompson and Litton, he pursued his law degree from the University of Virginia, earning his LLB in 1967. While continuing “of council” to the law firm in Grundy and expanding his business interests in the coal industry, he maintains his Professional Engineering Registration in the three states that include most of his business activities, Virginia, West Virginia, and Kentucky. He faithfully attends continuing education classes and short courses to maintain his professional engineering license.

Bill Kilgore, chairman and CEO of Anker Energy in Morgantown, West Virginia, has been a classmate of Mr. Robertson’s from grade school in Grundy, Virginia through his undergraduate days at Virginia Tech. He has also been a business partner. Asked what is unique about Red Robertson, Mr. Kilgore replies, “If you want to accomplish something in the mining business, first seek advice from Red. He has a unique insight and perspective that is well respected by everyone in the industry.”

Mr. Robertson came to Grundy in the late 1940s, hitchhiking daily from his parents’ home in Feds Creek, Ky. to Grundy to attend its high school. Today, Mr. Robertson and his wife Bobbie continue to reside in Grundy and they have five children: Shane, Tass, B.D., Spring Lee, and Akshat.
William Thomas (Tom) Robertson, Jr. was born on July 4, 1931 in a white clapboard house on an unpaved rural road in Cascade, Va., about a mile from the North Carolina line. He attended a high school in Pittsylvania County where courses in chemistry, physics and solid geometry were not taught. Yet he managed to find his way into Virginia Tech’s College of Engineering and ultimately spend over 39 years in a rewarding career with Duke Power Company, a Fortune 500 company traded on the N.Y. Stock Exchange, retiring as its Vice President in 1994.

Neither the two-room grades 1-7 school at Cascade that lacked indoor plumbing or running water, nor the county’s Brosville High School exist today except in Robertson’s memory. “It was a poor county,” he recalls, but the rural atmosphere and his work experiences with his father, a carpenter, and an uncle, who had a plant nursery and farm, peaked his interest in the field of agricultural engineering (AgE).

Robertson became used to hard work at an early age, since he worked either for his uncle or father all summers after the seventh grade, even through college. He recalls that his uncle purchased a small sawmill in 1944, right in the middle of World War II, to provide lumber. However, they had no power chainsaws and used two man cross cut saws for felling trees and then mules to pull the logs to the mill. When not working at the sawmill that summer, he was plowing with a mule, or helping graft (bud) fruit tree seedlings, a big effort of the plant nursery.

When he started college in 1948 at age 17, he borrowed the family car to commute 18 miles to Virginia Polytechnic Institute’s (VPI) Danville Extension campus. Later, he moved to Danville and lived with a cousin. By the second year, life was a little easier and he resided in a dormitory.

At the Extension campus, Robertson studied calculus, plus the physics and chemistry he never had in high school, as well as other engineering oriented subjects. This allowed him to enter the main Virginia Tech campus at Blacksburg in 1950 as an AgE major, today called Biological Systems Engineering.

At age 20 he was the first Robertson male family member to earn a college degree. He graduated in 1952 from Virginia Tech during the height of the Korean War. He applied for a direct commission in the Air Force, but receiving no quick response, he volunteered for the U. S. Army Corps of Engineers. He went to Fort Belvoir, Va., for basic training, followed by leadership training and then Officer Candidate School (OCS), graduating second in his class. He was commissioned in October 1953, assigned back to the Fort Belvoir engineer school, and subsequently received orders for Europe. “OCS and my military time was a super learning experience for me,” he says.

Returning to the states in 1955, he came off active duty
with the rank of First Lieutenant. He married his wife Barbara and this eventful year also started his long career with Duke Power Company, today called Duke Energy.

The Robertsons went to Charlotte, N.C., from their honeymoon, where they still reside. He had accepted a position as an engineer trainee with the fuel department of Mill Power Supply Company, the subsidiary of Duke, which did all Duke’s procurement, as well as being a major wholesale electrical distributor business in the Carolinas. In 1965 he was named manager of the fuel department and moved to the inactive reserves from the N.C. National Guard with the rank of major.

He progressively climbed the administrative ladder at Mill Power, becoming Vice President, Fuels in 1973, Executive Vice President in 1976 and President in 1977. With the last position, Robertson recalls the lack of fanfare with the appointment, saying “The president, who was to retire within a year, walked into my office on a late Friday afternoon, and said, ‘Duke wants you to be the next president and we’ll talk more about it on Monday.’ He had a heart attack that weekend, and I started Monday on a fast learning curve.”

“Duke was unique in the utility industry during that era, in that it did its own power plant (coal and nuclear) design, procurement and construction,” he explains. “In the 1970s and 1980s if these functions had been established as a separate company, it would have ranked in the top five in the nation,” he adds. His procurement group during these years was purchasing about $1 billion per year. Today, Duke Energy of the Carolinas’ generation remains a little less than one half nuclear and one half coal, with the remainder hydro and natural gas.

“The huge challenges of the first energy crisis in the early 1970s pushed Duke into the coal mining business to help ensure a supply,” says Robertson. “I was part of the decision and we received high praise at the time. However, by the late 1970s the coal market went south and we could buy at a much lower cost than we could produce, Duke had to close its four mines,” he says. After they were closed, as an additional assignment, Robertson was made president of both the mining and the land companies with the responsibility to sell all.

“On the nuclear side in the late 1970s, with expected large demand for uranium, and an uranium cartel existing, with prices soaring, Duke, again, to help ensure a supply for its huge nuclear program, entered into a joint venture in an in-situ mining operation in Wyoming, named Western Fuels,” he says. As an additional duty, Robertson was named President of the venture. “Then, when the Three Mile Island nuclear accident occurred, we all knew about the nuclear cancellations and the grinding halt of future construction,” he reports.

The sales division of Mill Power continued to grow in the 1980s, establishing four additional sales and wholesale locations in the Carolinas, along with a new Mill Power Technologies Department that was an early pioneer in marketing programmable controllers and IBM industrial personal computers. “Mill Power sales reached $50 million annually and the division grew to nearly 200 employees,” says Robertson.

In 1988, Duke made the decision to take the procurement division, then about 125 employees and Robertson out of Mill Power. He was elected Vice President of the parent company, and with the existing procurement organization from Mill Power, was assigned all the departments of a retiring Duke officer. He subsequently formed a new organization within Duke, named Procurement, Services and Materials (PSM). This was the basic support organization for the Corporation, and at its peak, totaled about 1100 employees.

During his career, Robertson was active in numerous industry groups and government activities, especially those related to procurement and fuels, chairing a number of them. He became a Certified Purchasing Manager (CPM) and was recognized throughout his career as leading highly ethical, effective and efficient procurement organizations, among other leadership qualities.

In Charlotte, he has participated in community and civic activities, such as: the Salvation Army Advisory Board; the community theater board; hospital advisory board; a University Advisory Board; Group Section Vice President United Way Campaign; a more than 30 year member of the Rotary Club of Charlotte; a past president, a Distinguished Rotarian Award, a Paul Harris Fellow and Major Donor; and past chairman and made life member of the Engineering Advisory Council, University of North Carolina at Charlotte. Through the Rotary Club and his church, he has supported Habitat for Humanity and helped build many houses in Charlotte. Duke Power’s leadership played a major role getting the NFL Carolina Panthers in Charlotte, with Robertson’s Real Estate Department taking the lead in negotiating and obtaining property for the stadium site.

After his retirement, in 1995 Robertson was asked along with some other retirees, working with a consultant, to help establish a unique Duke volunteer retirement organization. The name selected was the DUKE POWER-ful RETIREE VOLUNTEERS. He was the Charlotte area President during the first two years it was pioneered. Today it is in 22 Duke locations across the Carolinas and the annual total retiree volunteer hours are around 250,000. It includes every type of volunteer service one can imagine. Robertson still averages about 25 hours per month with the effort.

For over 51 years he and Barbara have attended the Hawthorne Lane United Methodist Church. Over the years, he has served on most of the church’s committees, many as chairman, and continues as a part time Sunday School teacher.

He and Barbara have two sons, the oldest Mark, a principal in the Charlotte-Mecklenburg School System and youngest Jeffrey, a nuclear senior engineer with Duke Energy at its Oconee nuclear station. Both sons are married and the Robertsons have three grandchildren.
When Warner Robins was growing up on a dairy farm near the Langley Field in the Tidewater area of Virginia, he would see everything from balloonists to biplanes to dirigibles soaring over his head. He recalls that when the young pilots were training, they would perform "ridiculous" maneuvers, buzzing low over the fields, scaring both farmers and livestock. It was the late 1920s and early 1930s.

“At first, I was frightened. But then I thought, ‘This has to be fun,’” he says today. “Sometimes, when Langley was fogged in, they would land in our pastures, harassing the farmers and the livestock, or on our roads. My level of interest increased every day,” Mr. Robins who is now 86 remembers vividly.

From the wide-eyed boy mesmerized by the acrobatic “Top Gun” stunts of the Langley aviators, Mr. Robins grew up to become one of the key contributors to the field of supersonic aircraft design and analysis.

The road to his aeronautical success was not easy. When he graduated from Hampton Public Schools in 1942, World War II was in full battle, and the 18 year-old raced to the post office to take a test to become an aviation cadet. Technicalities got in his way, but a few months later he went to Camp Lee, and “made a nuisance of myself every day until I got into the Army Air Corps,” he recalls. Eventually, after graduating and receiving his wings, he trained as a bomber co-pilot at the Kingman Air Force Base in Arizona and at Biggs Field in Texas. From the winter of 1945 until May 1945, he flew as a pilot or a co-pilot on six self-described “easy” missions over wartime Europe.

In November of 1945, he safely completed his military tour before his 21st birthday, and followed in his father’s footsteps, enrolling at Virginia Tech. “Dad was the Class of 1911, but was called home to assist with his father’s farm and grist mill, and then was called off to World War I. His assignment was to assist an onboard veterinarian with shipping horses from Newport News, Va., to England,” Mr. Robins says. His father was never able to return to Blacksburg.

The younger Robins started Virginia Tech during the winter quarter of January 1946. By taking 21 credit hours numerous times, he was able to graduate in the spring of 1949. He had been a member of Tau Beta Pi and Gamma Alpha Rho, serving as president of the latter honorary society. He led a long line of Robins family members to graduate from the University, including three of his sons, two grandchildren, and some of the folks who married into his family.

When Mr. Robins left Virginia Tech with degree in hand, he immediately returned to the Commonwealth’s lower Peninsula, joining NASA’s predecessor, the Na-
of supersonic aircraft.

“Much of what we consider to be standard knowl-
edge regarding supersonic aircraft configurations was
developed during the 20 years Warner Robins led that
group,” says Christopher Hall, professor and head of
the aerospace and ocean engineering department at
Virginia Tech. In fact, Mr. Robins was the lead author
on a NASA paper on supersonic mechanics that Dr.
Hall credits as “the Bible on supersonics.”

Modestly, Mr. Robins says he “was just in the
right place at the right time to move the technology
along. We had to do a lot of number crunching. My life
changed in 1960 when we got a real supercomputer. I
considered that a miracle.”

In the 1970s, Mr. Robins was involved in the tech-
nical analysis that led to the now-famous “747-Orbiter
Piggyback Concept,” used to transport the space shut-
tle orbiter. He laughs when he describes his first sug-
gestion to NASA for moving the shuttle. “I suggested
that they take all those extra shuttle sub-assemblies
at North American Aviation, assemble a fourth shuttle,
and cycle them back by barge through the Panama Ca-
nal. They were horrified with the idea that such a high
technology vehicle should be placed on such a low tech barge
where everyone could see it.”

Faced with their initial response, Mr. Robins and
one of his colleagues estimated the aerodynamics and
vehicle performance of a 747/Orbiter Piggyback config-
uration, which indicated the “pitch maneuver” (for ear-
ly flight testing) and the cross-country ferry missions
could be accomplished, using the new, high-thrust, GE
Cf-6 engines. He was subsequently presented with a
flag that flew on the oft-piggybacked shuttle Columbia
for his “personal contributions towards making space
available.” He still proudly displays the piece of history
on a wall in his den.

When Mr. Robins retired in 1980, he was NASA
Langley’s Assistant Head of the Supersonics Aerody-
namics Branch. It ran the Unitary-Plan Wind Tunnel,
a supersonic tunnel also used by the military and
their contractors since few, if any companies, had an
equivalent facility at that time. Its speeds ranged from
Mach 1.87 to 4.63.

“Warner Robins was responsible for maintaining
U.S. technology capability for several generations of
airplane aerodynamicists and airplane designers,” says
William Mason, an expert in the field of aircraft design
and professor emeritus of the AOE department.

After retirement, Mr. Robins remained a consultant
to NASA through his employee/subcontractor rela-
tionship to Kentron Aerospace Technologies Division’s
Planning Research Corporation until 1986. “It gave me
another chance to come up with some real concepts
in aviation, including off-the-wall, out-of-the-box type
designs. I told them they did not have to pay me much,
but I wanted to have fun,” Mr. Robins grins.

The octogenarian is completely retired now and re-
flexes on one of his favorite hobbies throughout the last
few decades of his working life, and some years since
– sailing. “I crewed for a great skipper and friend who
won lots of races. A high point was a first-to-finish in
our class in the 1976 race from Annapolis to Newport,
R.I. I sailed my own cruising tub all over the Chesa-
peake – surely one of the best sailing bays there is.”

Mr. Robins and his wife, Carolyn, will celebrate
their 60-year anniversary on June 16, 2011. They have
four sons and one daughter. He is the third of four
children, all of whom are still alive today, ranging in
age from 94 to his baby sister at 84. He says longev-
ity runs in his family, as his mom died a few weeks
before her 101st birthday. At that time, he recalls that
the blue-eyed feisty, one time redhead told him, “I am
proud of you. I think you are going to be all right.”
Dr. C. Howard Robins, Jr.
B.S. Aeronautical Engineering, 1958
Ph.D. Physics, 1967

C. Howard Robins, Jr., says he has lived his life “in the right place at the right time.”

“My folks told me when I was in high school that they could not afford to send me to college, so I went to work early,” Howard says. But, as luck would have it, his father read in the newspaper about the cooperative education program that allowed participants to alternate a quarter of work with a quarter of college course work. The co-op program became the key to Howard’s college education.

His high school principal told him “the best engineering school in the region was VPI,” so he applied and was accepted. The second stroke of luck was Virginia Tech had extension campuses scattered around the state in the 1950s, including one in his hometown of Norfolk. He lived at home the first year to save expenses. His fate improved yet again when the National Advisory Committee for Aeronautics (NACA) Langley Laboratory, also adjacent to his hometown, accepted him as a co-op student. (NACA was the precursor to NASA.) He transferred to the Virginia Tech campus as a sophomore in aeronautical engineering, and by his junior year he was co-oping in the rocket division of the laboratory. During his senior year, Howard and some of his fellow classmates were the overall winners in the equivalent of today’s national aerospace student design competition. “We won first, second, and third in the southeast district; first and third for the Middle Atlantic region; and second and third for the Northeast. We took eight of the 24 possible awards in the country,” Howard recalls.

“Thanks to Professor Robert Truitt, the department head, Virginia Tech’s aero curriculum was as good as any place in the country,” Howard says.

The Russians launched Sputnik in 1957, and the race was on to explore space. “When I graduated in 1958, aerospace majors had as many job offers as they wanted. NASA was a terrific working environment. I was able to join them, and they sponsored me for graduate school at Virginia Tech.” He again combined work and school and received his doctorate in physics in 1967. Along the way, he also secured an MSA in management engineering from George Washington University, and he attended the Advanced Management Program at Harvard University.

Howard spent 1958 through 1961 as the mission planning and performance analyst for Project Scout. He recalls hearing President Kennedy give his famous speech about landing American astronauts on the moon, and decided on the spot “that I was going to get on that project.” He moved to the Johnson Space Center in Houston to work on the Apollo and, subsequently, the Skylab Projects. The latter was the nation’s first space station mission. In Houston, he met his wife, Pat, a NASA employee who also had been captivated by the Apollo mission.

In 1967, Howard transferred back to NASA Langley where he continued to serve in a number of management positions, now on the mission to Mars called the Viking Project. NASA wanted to search for evidence of life and to obtain information about the surface of Mars, characterizing its structure and composition. “These types of missions were very demanding. Planets are only in the right positions at certain times, so you must live by a schedule. The position of Mars determined the project dates, and you cannot fail. There was very high pressure to stay on time, on schedule, and on budget. We had some two dozen experiments to run, and 23 of the 24 worked,” Howard smiles.

In the late 1960s and into the next decade, Howard recalls the Vietnam War, the War on Poverty and the recession were vying for the nation’s resources, and Congressional support for NASA waned amidst the competition. Howard moved to NASA’s Washington, D.C. Headquarters Office of Aeronautics and Space Technology in 1976 after the two successful Mars landings. “I was coming off the agency’s number one unmanned project, Viking. Now, I was working on the Orbiter Experiments Program and the Long-Duration Exposure Facility Program. I was shocked to see the Agency’s budget problem,” he says. But he continued to develop new ground for the space agency, and in 1980 was appointed Chief of the Mission Operations and Information Systems Branch of the Planetary Division of the Office of Space Science and Applications. Three years later NASA selected him for the President’s Executive Exchange program, and he was given a one-year assignment as Acting Director of Research and Development at the Newport News Shipbuilding and Dry Dock Company. “Again, it was another stroke of luck as the director retired as I was arriving. I have a lucky charm. And Newport News was changing its management approach, starting to build ships on a project basis as I had done at NASA.”

“This was a wonderful experience,” Howard says. “I could close my eyes and feel like I was still at NASA. We did manage to get the two organizations closer, and I discovered the shipyard was a tremendous resource for NASA Langley management to set up some exchanges.”

Howard returned to NASA Headquarters in 1984 where he subsequently served as Deputy and then Associate Administrator for Management. In 1991 he was appointed the Deputy Associate Administrator for Space Systems Development, responsible for assisting in executive leadership of major system development efforts, including the International Space Station. “I enjoyed project work, and management was particularly interesting. I made the simple discovery that the root of almost all engineering problems is people. Problems are almost always management problems. For example, the defective seal on the Challenger and the foam on Columbia were symptoms, not causes. He received the Outstanding Leadership Medal for directing the effort to restore the NASA institution following the Challenger accident. He also received the Exceptional Achievement Medal for leading the effort to completely revise the agency’s management system for major system development programs and projects, and the Presidential Rank of Meritorious Executive.

He retired from NASA in 1994, and served as an Executive in Residence at Virginia Tech from 1994 through 1998. Working from the Northern Virginia campus, he led a number of initiatives, assisted in teaching graduate classes in management, and was a consultant to the federal government in program and project management. “Two institutions made my life — Virginia Tech and NASA. I have tremendous loyalty to both. When we achieve things, if we achieve things, it is always with help. Virginia Tech is a school of opportunity and that is a legacy we should not forget,” Howard says.

Howard remains a member of Tau Beta Pi, Sigma Gamma Tau, Kappa Theta Epsilon, Sigma Pi Sigma, and Sigma Xi. He is a member of Executive Partners, a group of veteran leaders from the work force who interact with MBA students at William and Mary. He is on the Board of Governors at his country club, is active with the Williamsburg Kiwanis, and continues to consult.

Howard and Pat of Williamsburg, Virginia, have two children, Staci and Clinton Howard III. “My daughter is the black sheep,” he jokes. But she did follow in her father’s footsteps, working as a program analyst at NASA. His son works in marketing management, having received his business degree from Virginia Tech in 1988.
B. Fielding Rolston  
Class of 1964, BS, Industrial Engineering

Fielding Rolston learned about productivity and management at a very early age. He and his brother grew up on a 200-acre beef cattle and sheep farm outside of Harrisonburg, Va. His father worked as a manager of the local co-op Farm Bureau. There, he would learn the latest agricultural innovative techniques, come home, and tell his obedient young sons what to do. When they went off to college, his father wisely sold the farm.

Rolston’s task-oriented upbringing makes his choice of industrial engineering (IE) – a career that focuses on improving systems and the interaction of engineering and people – seem quite pragmatic. Eventually he would assume his father’s supervisory role, only as a career executive at Eastman Chemical, introducing the latest process improvement techniques that led to increases in employee productivity by 22 percent and customer satisfaction by 25 percent. These types of numbers hastened his rise to the top echelons of management.

But first, Rolston had to find a way to attend college. A trip to Virginia Tech when he was selected as a Boy’s State participant due to his high school leadership abilities provided him with his first view of the Blacksburg campus. The visit made a good impression on him. So when a number of his high school classmates chose Virginia Tech, he followed. He started in chemical engineering, but transferred to the industrial and systems engineering (ISE) curriculum because of his interest in the people side of the business.

“I enjoyed learning about motivating people,” says Rolston, who served as the president of Alpha Pi Mu, the honorary IE society, and vice president of the American Institute of Industrial Engineers (AIIE), now known as IIE, when he was a student. His numerous accomplishments led to his selection as the Outstanding Virginia Tech Industrial Engineering Student in the Class of 1964 by the Western Virginia Chapter of AIIE.

With a deferred starting date with the military after his graduation in 1964, he selected employment with Eastman Chemical, a decision that paved his professional career for almost 40 years. “I liked Eastman’s philosophy, generated by George Eastman. It was a first class company in how they managed people,” Rolston recalls. His first job was process improvement in a manufacturing area, and then he went off to work for two years as a ROTC commissioned officer at the Pentagon to fulfill his military obligation.

The Army used Rolston’s IE expertise, assigning him to a unit responsible for redesigning the Army’s personnel information system. And he used the time wisely in Washington, D.C. to complete a master’s degree in administration at American University in 1968, at which time he returned to Eastman Chemical’s corporate headquarters in Kingsport, Tenn.

Coming off his Army assignment, Eastman asked Rolston to be the project team leader for the design and implementa-
tion of an automated personnel information system for Eastman Chemical Company (currently 11,000 employees and annual sales of over $7 billion). “That job provided me a lot of exposure to management, helping me get future jobs,” he says.

In 1977 Rolston was asked to lead the corporate staff of industrial engineers. College recruitment became a vital component of this effort, and within six years 30 IEs were added to the payroll, and the group “installed quality management systems in all of the functional areas of Eastman” leading to reduced costs, more effective business processes, and improved customer service, Rolston explains.

As a result, Eastman Chemical received a highly coveted management award, the Malcolm Baldrige Award, in 1993. “Building the interest in quality management led to this highly sought after award, and this was probably the most challenging and most gratifying part of my career,” Rolston says.

Four of the 30 IE recruits Rolston brought to the company eventually secured vice president positions, as did Rolston. In 1987, he was named the Vice President, Supply and Distribution where he used quality management principles to redesign the materials flow process so that it operated “like a pipeline. If we sold one pound of material, I wanted one pound of raw material to simultaneously enter the pipeline.”

In 1995 his title became Vice President, Customer Service and Materials Management.

In 1998 he led a complete reengineering of the human resources process for Eastman. As the Vice President of Human Resources, Health, Safety, Environment and Security, and later Vice President of Human Resources (HR) and Quality, his focus was to ensure Eastman Chemical had the right people in the right jobs with the right training and motivation. “HR people were told that if their work did not directly contribute to increased employee productivity, we should stop doing the work and turn to work that did increase employee productivity,” Rolston says.

An HR business account manager was assigned to every major organization as a strategic member of the management team. When the redesign was finished, the cost of the HR function was reduced by 25 percent during a period of time when employee productivity for the company was increasing by 15 percent per year.

In 2003, Rolston retired from Eastman as Senior Vice President, HR and Communications.

However, Rolston doesn’t really understand the word “retirement.” His volunteer work on some very influential boards has landed him the simultaneous and current chairmanships of three of them. Since 1998 he has chaired the board of Eastman Credit Union, currently chairs the Tennessee State Board of Education and the Emory and Henry College Board of Trustees. He remains a member of the board of the Wellmont Health System, which he chaired from 1996 until 2000.

When Rolston chaired Wellmont, it grew from two to five hospitals, and is now considered the premier healthcare system in the southwest Virginia and east Tennessee region with annual patient revenues of $700 million. The Eastman Credit Union is growing at a rate in excess of 12 percent annually and is now the largest credit union in Tennessee, and one of the largest in the country with assets of $2 billion. With the education board, Rolston has used his engineering skills to develop a strategic planning process for K-12 education in the Volunteer State.

On the latter board “the Governor wanted people with a business background,” Rolston says. First appointed by a Democrat, he was reappointed by a Republican. “We desperately need to improve the K-12 educational system, and I think we are making good progress, particularly in increasing expectations in the math and science areas.”

Rolston also chairs the Kingsport Community Foundation Board of Directors and is on the boards of the Barter Theatre and East Tennessee Foundation.

“It is important to me to feel like I am making a contribution. These not-for-profit organizations couldn’t function without volunteers, and I find the work very gratifying. This has been an excellent transition from my position at Eastman Chemical as I try to decide what to do with the rest of my life,” Rolston smiles. Eastman Chemical encouraged this community involvement that Rolston started more than ten years before his retirement.

In recognition of his work with Eastman and community organizations, Rolston received the 2001 Outstanding Achievement in Management Award from the Institute of Industrial Engineers at their annual meeting in Dallas, Texas.

Rolston’s wife, Joyce, a nurse whom he met in high school, holds her degree from the Medical College of Virginia. “My involvement with the medical profession is partially related to Joyce,” he explains.

They have two children, Clay, also an IE who works at Eastman Chemical, and Tina, a Hokie who earned her degree in education. They are both married, living in the Kingsport area, and have provided the Rolstons with three grandchildren each.
Neville Rowland
Agricultural Engineering, 1963

Neville Rowland’s life story is the proverbial rags to riches tale.

When he describes growing up in Virginia’s Pittsylvania County on a 43-acre tobacco farm in the 1940s and 50s, he recalls hunting for the family’s meat. His family grew all of their own vegetables and fruits, and only bought the staples when necessary.

The seventh of nine children, he and his siblings lived in a two-bedroom house where the parents had one of the bedrooms. Not to worry, Neville smiles, since only five of the children were ever home at the same time.

The self-sufficient youngster made straight As in math courses in high school yet he never recalls bringing home a single book to study. “The only book in my house was a Bible,” Neville explains. His father was a fifth grade graduate; his mother attended school through seventh grade.

Neville’s high school football coach gave the teenager the idea to pursue a college degree. “I went home scared to death to mention to my family that I wanted to go to college. It took me three or four nights to get up the nerve to mention it at the dinner table. And then, my dad just said, ‘Okay.’ And he never asked me anything more. They paid my way and to this day, I have no idea how,” Neville reminisces.

Selecting Virginia Tech was easy. During high school, Neville had attended Boy’s State and the Future Farmers of America camp at the University. “I was a farmer and I was good at math so entering the agricultural engineering program (now biological systems engineering) was the obvious choice,” he says. But he did not change his academic habits. “I did not study at Virginia Tech either.” His concession to academics was he attended all classes and did his homework.

Neville became a member of the Corps of Cadets, but it was not a cognizant choice. “I knew I could live with the rules. That did not bother me. In fact I belonged to about 16 different organizations in college and one was the Precision Rifles Drill Team,” a skill he developed as a young hunter. “I lived day to day back then. I was never a planner,” he admits.

But his abilities were apparent as he was elected President of the Corps of Cadets and inducted into Omicron Delta Kappa, the honorary leadership society.

When Neville graduated in 1962, he received a ROTC commission in the U.S. Army. He served two years of active duty in Air Defense at Ft. Bliss, Texas from 1963 through 1964, and was discharged 30 days before his battalion was shipped to Vietnam. He went to work for The Trane Company as a sales engineer in air conditioning for the next five years, working on 100 per cent commission. He left as its number one sales person out of the original training program of 106.

The boy who attended grade school barefoot was now able to purchase stock in Southern Air, Inc., as a full partner in 1970. Southern Air had been his best account while he was at Trane, and the company recruited him. He says he started as a “gopher,” but he helped grow the company from a small residential heating, air conditioning, and plumbing contractor in Lynchburg, Va., to a three-state mechanical, electrical and service contractor with eight branch offices and over 700 employees. The sales increased some 15 percent each year, today totaling more than $72 million annually.

In 1998, Neville took partial retirement, scaling down from his 70-hour work-week to 20. For the past six years he has mentored and advised the employee owned company, and he took his full retirement in January of 2005.

Looking back on his career, he is pleased he made the switch to a small company where the “fruits of the labor were much more visible” and where he “did not have to fight the rat race of the large corporation which did not fit the mold of my personality.”

With his wife of 41 years, Mary, who he credits with changing his life, he plans to enjoy retirement. “Mary is extremely outgoing, and I have picked up on some of her good traits,” he says. They have two children, Kim, a graduate of Salem College, who currently lives in Wake Forest, N.C., and a son, Scott, who earned his bachelor’s degree in industrial engineering from Virginia Tech in 1992 and an MBA in 2003. Scott lives in Roanoke, Va. They also have five grandchildren.

Neville is a past president of the Rotary Club of Lynchburg and a former District Assistant Governor. He has served as the Chapter President and State Associate Vice President of the Association of General Contractors. At Virginia Tech, he has served as a member of the Alumni Board, the College of Engineering Advisory Board, and he remains an active member of the Committee of 100.
Thomas D. Rust  
Class of 1965, BS, Civil Engineering

Tom Rust, the first person in his family to earn a college degree, smiles as he says choosing Virginia Tech for his studies was easy. “I went to U.Va., for an interview and, being basically a gentleman’s school, they told me I would have to wear a coat and tie to class. I went to Virginia Tech, a military school, and they told me I would have to wear a uniform. Since I did not have a coat and tie, I never regretted the decision,” he laughs.

“I was certainly challenged and had to struggle the whole time,” Rust recalls about his college studies in the early 1960s. “But I definitely wanted to be a civil engineer so I gave it all I could.” It helped that he had practical experience since he spent the first two years after high school working as a drafter with Fairfax County in northern Virginia. And the county hired him each summer of his college career. “They were extremely good to me,” Rust says.

Today, he is chairman of the board of his company, a veteran political figure, and an accomplished engineer with two master’s degrees — giving credence to the idea that hard work does pay off.

His professional career started in 1965 after he received his diploma in civil engineering. He returned to the Department of Public Works in Fairfax until 1969, working as a design engineer, assistant chief engineer, and chief of the design branch.

But he knew he wanted more. Growing up, he appreciated his father’s independence in owning and operating a small painting company. “I saw the benefits and the challenges he faced,” Rust says. “I always knew that I wanted to be in business for myself, and have my name on the door.”

So, in 1969, after being approached by Patton Harris and Ford several times, he decided to join the independent consulting firm founded in 1952. The firm functioned as a professional engineering and land surveying operation with about 25 employees when Rust added his credentials. He was tasked with a number of challenging projects, and obviously impressed the management because after a few years, the principals asked Rust to step in when Ford stepped down from his post.

As he was helping to build the firm, he also enrolled first at George Washington University to earn his master’s in public works engineering in 1978, and then his master’s of planning in urban and environmental planning from U.Va., in 1989.

How could he work in a demanding position, be the mayor of Herndon, and pursue his second graduate degree simultaneously? “My time management is not nearly as good as it should be,” he says modestly. “I am a big believer in lists. I have short-term and long-term lists, and I do work long hours most of the time. The firm has been extremely supportive of me and my outside activities.”

In the almost 40 years that Rust has now worked at the Chantilly-based firm, the name has changed to Patton Harris Rust and Associates, and has evolved into a corporation with about 40 stockholders. The number of employees has jumped to more than 400 in 18 offices throughout the mid-Atlantic region.

Some of the accomplishments Rust is especially proud of is his firm’s work on a major expansion to Tyson’s Corner Shopping Center and the development around the $238 million
Smithsonian’s National Air and Space Museum, including all of the bridges and roadways leading in to its new location near the Dulles Airport during the first part of this decade. The firm has also designed major utility infrastructure systems in Maryland for a number of municipalities.

In November of 2007, Rust received the Tower of Dulles Award, the highest recognition offered by the Committee for Dulles, in recognition of his efforts to promote transportation improvements and his meritorious service for the betterment of the Dulles economic corridor. “I was humbled by this award given sporadically when someone has contributed to the economic viability of the Dulles Corridor,” Rust says. Past recipients include Senator John Warner and Congressman Frank Wolf.

“Mr. Rust has spent his entire technical career designing or leading design teams that have created the infrastructure for many of the premier developments in northern Virginia. Mr. Rust is considered an expert by many courts in Virginia,” says William McAllister, retired CEO of Colonial Mechanical Corp. of Richmond, Va.

Rust has also distinguished himself as a dedicated public servant, beginning as a member of the Herndon Planning Commission and its Town Council in 1971, moving on to its mayor in 1976 for an eight-year term, followed by another 11 years from 1990 until 2001 when he was elected to the Virginia House of Delegates.

“I first became involved in Herndon’s politics when it was a small community of about 4,000 or 5,000 people. We were experiencing a lot of growth issues, and I was asked to run for office, and I did. I did it out of a sense of community,” he explains. During his tenure in Herndon politics, he pursued and constructed the Herndon Beltway, a way to remove some of the northern Virginia traffic from the small community, now the third largest town in the state with a population of some 22,000.

Rust also cites the creation of the Herndon Municipal Center complex that includes a branch of the Fairfax County library system, a government office building, the Herndon Council/Fairfax District Court meeting facility, and the Town Green for special events and concerts, as one of his biggest achievements. “I was a bricks and mortar type mayor,” he says, adding that he oversaw all of this work without ever raising taxes in Herndon. “The town was growing, and had about a 52 percent commercial, industrial tax base when the norm is about 15 percent. We had a very healthy business environment, which substantially contributed to our community’s success.”

As his achievements on both the business and the political front continued, Herndon became part of a redistricting plan in Virginia. As the new geographic regions were identified, it became apparent that there was an opportunity for Rust to move to the Virginia General Assembly. Colleagues motivated Rust to run, saying his background made him “the logical guy for the new office.” Rust also considered his engineering background and felt he “could bring something to the state.”

As a result of his efforts, the Northern Virginia Transportation Alliance honored Rust with its “Dust, Blood, and Sweat” award in recognition for his untiring efforts to secure the first new transportation funding for this region in 20 years. Rust has also worked with both parties to help ensure the legislature continues to make needed investments in education. He has worked successfully to increase teacher’s pay, fund colleges and universities, increase student financial aid and make the community college system more attractive to those who wish to start their collegiate career there and finish at a four year institution.

To ensure the 2004 budget bill with the education component, he and 16 of his Republican colleagues broke rank and aligned themselves with the bi-partisan bill in order to make sure “Virginia’s education systems remains among the nation’s best,” he says.

Rust serves on the education, transportation, and science and technology committees of the Virginia House of Delegates, and has played a critical role in helping with the creation of the Institute for Critical Technology and Applied Science at Virginia Tech.

Prior to his election to the Virginia General Assembly, Rust was slated to become the Rector of the Board of Visitors at Virginia Tech, but he had to cut short his four-year term, ending as vice-rector in 2001, after his successful legislative campaign. He is a member of Virginia Tech’s College of Engineering Committee of 100. He also served on Longwood College’s Board of Visitors from 1980 until 1988, with the last seven years as its rector. He has served on numerous banking boards.

“Civil engineers do things daily that impact the quality of life, and that may give us a little different view. We are often in the forefront, giving presentations to different elected bodies and that can put us out in front in the political environment,” Rust comments regarding the proclivity of CEs to become active in communities.

As for the future, Rust says he hopes he can “slow down some” and enjoy his General Assembly work, and maybe have the ability to give more time back to Virginia Tech.

Rust and his wife Ann continue to reside in Herndon.
Donald L. Sage  
Industrial Engineering  
Class of 1956, BS  

Don Sage, one of two sons raised by his mother, Virginia Beazley Sage, never had a doubt that he would be attending college. Although his parents divorced when he was only two, his uncle, a member of the mining industry, stepped in as a mentor to the young man.

“Engineering had an appeal for me,” Mr. Sage reminisces, and Virginia Tech was my choice. I had to take bonehead algebra my first academic quarter, but after that I moved right on into the mainstream,” he laughs.

Arriving on campus in 1952, the Corps of Cadets’ member selected industrial engineering because he “liked the idea of making processes better.” He secured a summertime job at the Richmond Engineering Company (RECO) where he got his first taste of manufacturing, but he also enjoyed his part time job of selling ice cream for 65 cents an hour. This retailer recognized the obvious talents of the young man and soon asked him to manage the ice cream operation at a whopping increase to 75 cents an hour. “My first two summers I invented some good ice cream dishes,” Mr. Sage grins.

When graduation time came, Mr. Sage had a number of offers to sort through, and he again turned to his uncle for advice. “He liked Western Electric since it was part of the Bell System, and he spoke of the opportunity to have a long career there,” Mr. Sage recalls. “Western Electric was the manufacturing arm of AT&T and it was a good choice for me as it and AT&T jointly owned Bell Labs, one of the world’s great human resources.”

The Hokie started at Western Electric’s Winston-Salem, N.C., location, but was soon called to military service. He spent six months at the Aberdeen Proving Ground and another 18 months at Fort Bragg where he commanded an Ordnance Company. A second opportunity to serve occurred with the erection of the Berlin Wall, a long-time symbol of the “Iron Curtain” in Germany. His tour lasted twelve months before he returned to his lifetime career with the communications giant.

In 1973, he jumped at the chance to assist in the start-up operations of Western Electric’s Richmond, Va., Printed Wiring Board factory, a plant that transformed into ATT Microelectronics. It became Lucent Technologies after Sage retired in 1994. Even before construction, management decided the plant would become a paperless manufacturer, with everything performed on-line with instantaneous feedback. The plant would become the world’s largest manufacturer of printed circuit boards under one roof.

“We produced miles of these circuit boards each week, with all of the designs transferred in digital in-
formation, and then machine instructions and finally orders readied for shipment," Mr. Sage says about this very progressive operation in the 1970s. As the engineering manager, Mr. Sage and his employees had to write their own software, and since the computers were not linked at the time, they also had to "fool them" to allow them to talk to one another. We took the designs we received and created families, which allowed automatic placement of multiple circuit board images on a panel. This meant that we were able to shorten the intervals for manufacture, and therefore, get the product to our customers faster than any of our competitors.

The creativity of Mr. Sage’s group brought much attention to the Richmond facility. In 1984 Fortune magazine described the operation as one of the 10 best-managed factories in America. Mr. Sage’s management team received the Society of Manufacturing Engineers CASA Award for its leadership and excellence in enterprise integration.

Mr. Sage became AT&T’s campus manager, allowing him to return to Virginia Tech where he says he was able to attract hundreds of Hokies to work for his employer. He was also successful in brokering deals for a $1 million gift of computing equipment and a several hundred thousand dollar manufacturing research award to his alma mater. AT&T recognized Mr. Sage in 1990 for producing the “most effective overall college relations program” of its group of 160 teams.

The Virginia Tech engineer became a charter member of the ISE Advisory Board founded by Marvin Agee, then the department head. He was one of five industry members on the first board, providing advice to the academics about the needs of industry. Mr. Sage remained on the board for 20 years, serving a rotation of department heads. “I think we influenced the curriculum ... mainly through our ideas about the integration of systems, possibly even influencing the creation of the Management Systems Laboratory. We also established the Agee Scholarship Fund, and a number of our board members established fellowships.

Mr. Sage also spent four years on the College of Engineering’s Advisory Board from 1997 until 2001. In 1987 he received the Outstanding Alumni Award from the Virginia Tech chapter of Alpha Pi Mu, and in 2004 the ISE department presented him with its Marvin Agee Distinguished Alumni Award. He is a member of the Committee of 100, and a past member of the Engineering Executive Council for the Campaign for Virginia Tech in 1996–1998.

“I owe a lot to Virginia Tech. When something so valuable is given to you, you want to try and help out where you can,” Mr. Sage says simply of his own generosity. He also employs the same feelings about his community and his church. He was recently appointed to the Virginia Baptist Mission Board of the Baptist General Association of Virginia. He is a chapter vice-president of the New Outlook Pioneers for 2007–
It is of little surprise that Samuel Shrader spent his career working in the coal industry. He was born in August 1938 in rural coal country’s Tazewell County, Va., just outside of Bluefield. He and his 10 younger siblings were the product of a father who started in the coal fields in 1932, himself a son of a coal miner, who worked for the same company starting in 1909. Coal was in his blood from the start.

When Sam graduated high school in 1956, he decided on college — Virginia Polytechnic Institute — to get out of the family business, and try metallurgy. He was the first person in his family to attend college. “People recognized I was not a knucklehead, but when I wanted something, I tucked my head down and went after it,” he says. He stayed with metallurgy for two quarters before Charlie Holland — then head of the College of Engineering’s mining department — persuaded the young man to switch majors during a student assembly. Holland spoke of the Bishop Coal Mines, which hit close to home — figuratively and literally — for Sam. “As I listened, I thought, ‘Why am I in metallurgy when coal is the thing I know about.’”

Mr. Shrader went home and told his parents he was switching to study mining. His father threw a fit. “And he was a man known for throwing fits. He was a big man. A huge man, six foot, three. Two hundred and fifty pounds,” Mr. Shrader says. “If you shook hands with him, it was like shoving your hand inside an encyclopedia.” The father yelled, “I thought you went to college to get away from this stuff!” But, his son had a comeback: “I didn’t go there to get away from it. I went there so I could do a better job.” The father huffed and sulked. His offspring returned to Blacksburg as a mining and minerals major.

Flash forward some 55 years, and Mr. Shrader kept his promise: The third generation coal miner did a much better job. The company his father and grandfather worked for was called Pocahontas Fuel, which became part of Consol Energy, part of the larger multi-billion-dollar Consol Corp. When Mr. Shrader retired in the mid-1990s, he was serving as senior vice president of the corporation’s entire Eastern Region, overseeing mines in Pennsylvania, Ohio, and West Virginia, encompassing large swaths of his native Appalachians.

But Mr. Shrader’s path to success was not smooth. In 1958, his sophomore year in college, he was forced to drop out of college because of lack of funds. He took a job with the U.S. Steel’s forestry department, worked in the same coal mines as his father and grandfather, and married his high school sweetheart, Judy, and — with help from her job as a nurse in the Catawba area near Roanoke — reentered Virginia Tech in 1960. “I
don’t think I would have finished (college) had it not been for her,” he says.

He graduated with a degree in mining engineering in 1963, and set to work for Consol. It would be a 30-year career. He started at the Pocahontas office collecting reserve data and preparing reports on the rural Virginia Horsepen seam that would later develop into the very successful Horsepen strip mine. Soon he was working as the assistant to the division president, setting up contract mines in the Virginia/West Virginia region. In 1964, Mr. Shrader was assigned to the Itmann No. 3 mine in Wyoming County, W.Va., where he worked at the mine face and began getting management experience as a section boss. This field experience would help him later as he dealt with union, work, health, and safety issues.

In 1965, he was promoted to superintendent of the Buckeye Mine. Three years later, he was again promoted to regional industrial engineer. It was at this job that Mr. Shrader used several then-groundbreaking computer programs developed at Virginia Tech’s mining department. He worked closely with then-department head J. Richard Lucas, and mining professor Lou Prelaz, and hired summer interns from the college. Some of those interns have themselves bounded up the ranks of the mining industry.

In 1970, Mr. Shrader was named regional mining engineer and assistant chief engineer, and then promoted to regional chief engineer. It was at this latter post that he supervised the construction and opening of the Kepler mine and preparation plant in Pineville, W.Va. He ascended through the ranks, being named vice president of operations for Bishop Coal Co., a partnership between Consol and Inland Steel Co. in 1974. The following year he was named vice president of Consol’s Tazewell County operations.

It was while working as chief engineer, a job Mr. Shrader says he “was tickled pink to have,” that he also was asked to serve as regional safety director for Consol’s southern Appalachian region. The need was great as a series of accidents put a bruise on the region’s safety record. With other senior officials, “we wrote up step-by-step operating procedures for every piece of underground equipment, with an emphasis on avoiding the shortcuts that people take that cause accidents,” the mining executive says. “We achieved a very large reduction in our accident frequency rate.”

It was during the 1980s that Mr. Shrader’s star truly rose. In 1981, he was asked to serve as assistant to Bobby Brown, then the executive vice president of operations for all of Consol, who would then later ascend to president, CEO, and chairman. In 1984, Mr. Shrader reached his top position: senior vice president of the Eastern Region, overseeing dozens of projects and hundreds of employees. During his 10 years in this position, from which he retired in 1994, he saw production nearly tripled from 9 million to 25 million tons and profits went from $1 to more than $10 per ton. He also was tasked with opening the Bailey and Enlow Fork mines in Pennsylvania, the then-largest underground coal mining operations in the United States. Mr. Shrader became widely known as an industry leader in the use of large-scale long wall mining, and was the first industry manager to use 1,000-foot-wide and 10,000-foot long panels.

Also a bit of an inventor, he developed two patents during his lifetime. One helped better miners’ safety while also speeding up a sometimes gruelingly slow, stop-and-start process of opening narrow-entry mines. The device allowed for people handling roof bolters and also miners to work simultaneously, instead of each waiting on the other. At the time, it helped Mr. Shrader’s teams to increase productivity by 40 percent.

Mr. Shrader also worked to insure rights and benefits for his workers, above and beyond those promised by union representation. At two nonunion mines in Pennsylvania — a state that leans hard to the union side — Consol opened two nonunion mines. Rather than a disaster of fleeing employees and threatened walkouts, the move proved wildly successful — pay was 10 to 12 percent above union scale, and he fought for the miners to participate in company matching investment plans and other benefit packages. The move was so successful, some employees were able to retire at age 50, Mr. Shrader says.

Today, he is enjoying his own retirement. He flies small aircraft recreationally; takes annual pilgrimages to northern Canada to hunt geese and ducks, and then to rural Bland County, Va., where he owns a home and hunts deer. While in Southwest Virginia, he also attends as many Hokie football games as scheduling will allow. Mr. Shrader lives in Punta Gorda, Fla., for much of the year, sharing his home with Judy, his high school sweetheart he married in 1958, and fishes on a regular basis. “I like the outdoors, always have,” he says. He loves playing in the snow — skiing in Aspen, Colo. — but hates shoveling it. Hence Florida.

He remains active with the Virginia Tech Department of Mining and Minerals Engineering, having served as a charter member of its advisory board from 2000-2009. In nominating him for the honor, both Greg Adel and Michael Karmis of the Department of Mining and Mineral Engineering say, “Throughout his career, Sam became known as one of the most knowledgeable coal-mining engineers and managers in the world and the chief go-to guy for Consol who could make any operation run and run profitably.”
One of the key men who planned the building of Crystal City, Virginia was Stuart Shumate, a 1934 graduate of civil engineering at Virginia Tech. Mr. Shumate was the president of the Richmond, Fredericksburg & Potomac Railroad (RF&P) at the time, and his company owned this valuable piece of land just outside the nation's capital.

The purchase of this northern Virginia land by the railroad was not unusual. Railroad companies routinely bought property along their lines in order to use the land to develop industry. The goal was to secure businesses that might, in turn, use the transportation giant for transporting freight. But Mr. Shumate recognized that the future site of Crystal City was "way too valuable" for industrial use. Instead, he worked with Charles A. Smith, a developer, to build prime business and government buildings with designs that primarily used vertical architecture to maximize the space. Mr. Shumate recalls this venture as the largest operation he undertook during his career.

Mr. Shumate had learned early in his life how to stretch a penny. Born in 1915, he experienced the Great Depression as a young teenager. He entered Virginia Tech in 1932 after graduating from Calverton High School. When the time came to receive his bachelor's degree, he recalls few options were available. One that interested him was an opening with the Pennsylvania Railroad. After the company met with a number of applicants from Tech's College of Engineering, they selected Mr. Shumate to come to Philadelphia for a second interview. They immediately offered him his first position.

Although he admits that he took the job "because he could get it" in the aftermath of the Stock Market Crash of 1929, Mr. Shumate quickly became fascinated by the railroad industry and "loved every minute of his work." Part of his early responsibilities was to ensure the safety and reliability of the railroad's infrastructure to allow the then high speeds of 70 to 80 miles per hour.

He recalls 1943 as a pivotal year for him. He met and married within six months "a pretty girl named Mary from West Virginia, and every year since the marriage has only gotten better." But shortly after his wedding day he was shipped overseas as a member of the U.S. Army Transportation Corps. The Army used his talents to operate a railroad in Europe, and when he returned to the Pennsylvania job after the war, he carried a Bronze Star and retired from the service with the rank of Colonel.

He moved to the operations side of the railroad business and began his professional ascent. But he soon received a telephone call from one of his Virginia Tech CE classmates who graduated two years ahead of him — Tom Rice (a 1999 initiate of the Academy of Engineering Excellence). In 1946, Mr. Rice recruited his friend to the RF&P Railroad. "I valued Stuart very much as a fine, fine gentleman and engineer. In fact, when he moved to Virginia, he and his wife Mary and I and my wife Jaqueline shared a house together since housing was so limited after the war."

Mr. Shumate eventually became the RF&P president in 1961, and remained in this position for two decades. (Mr. Rice went on to become the CEO of CSX Corporation.) After Mr. Shumate's retirement, CSX acquired RF&P.

Mr. Shumate was extremely active in his community during the time he was the RF&P president. His role also made him president and director simultaneously of the Richmond Land Corporation, and he served as chair of the Potomac Yard Board of Managers from 1955 until 1981. He was a director of the A.H. Robins Co. from 1966 until 1986, providing him with "an exciting exposure to a different type of industry." He was also a director of the First and Merchants National Bank (1958-68 and 1974-81) and the Fruit Growers Express Company (1960-78). He served for eight years on the Board of Visitors of Virginia Commonwealth University and was a member of the study group that recommended the merging of the Medical College of Virginia with the Richmond Professional Institute.

He served on five Chambers of Commerce: the U.S., Virginia, Alexandria, Fredericksburg and Metro Richmond, including the 1974 chairmanship of this last group. He was also a member of the Traffic Clubs of Richmond, Pittsburgh, and New York.

He and his wife, an artist who works with water colors, have two children, John and Susan, and two grandsons.
Dr. Richard D. Sisson, Jr.

Metallurgical Engineering; BS, 1969 (MS, 1971 and Ph.D., 1975 from Purdue)

Rick Sisson, Jr., describes himself as “a ham” in the classroom who “loves to get up and tell stories. I can tell the odd joke because I have a captive audience,” the Virginia Tech metallurgical engineering — now materials science and engineering (MSE) — graduate laughs. However, his style must work because he is a recipient of Worcester Polytechnic Institute’s (WPI) Teacher of the Year Award.

But he also believes he emulates his undergraduate Virginia Tech engineering professors. “I had an outstanding experience at Virginia Tech, and my professors had a major impact on me, especially T.P. Floridis. “He was very demanding, very organized, and a great guy. I had six classes from him, and I model my classes today after his style.” While an undergraduate, Sisson was also greatly influenced by other Virginia Tech professors including Chuck Houska, and later in his life by Rich McNitt and Mac Louthan, as well as Purdue’s M.A. Dayananda.

Sisson has had a noteworthy academic career and a short stint in industry since graduating from Virginia Tech in 1969. He earned a master’s and a Ph.D. in metallurgical engineering from Purdue University in 1971 and in 1975, respectively. Although he wanted to teach after earning his doctorate, the first employment opportunity he found was as a research metallurgist for E. I. DuPont at the Savannah River Laboratory in Aiken, S.C.

At Savannah River, Sisson first met Louthan, a group leader, who would eventually join the Virginia Tech engineering faculty and lure Sisson back to the Blacksburg campus in 1979. But in the interim, Sisson worked for DuPont developing plutonium dioxide that acted as a heat source for nuclear batteries. “Not a lot of people were good at handling these materials,” Sisson recalls. But he enjoyed the challenge and actually was the first to redesign and assemble “with a lot of help,” an electron microscope to allow his laboratory to characterize radioactive material.

In 1976, he had his first stint at WPI located at Worcester, Ma. The native of the Bay State was returning home, at least for three years. WPI had innovative grants that allowed the institute to recruit outstanding young engineers to join its faculty, and Sisson became WPI’s Morgan Distinguished Assistant Professor. After three years, Louthan, also a Virginia Tech alumnus, who “knew everyone in the field,” Sisson says, recruited him back to southwest Virginia. It seemed as if he was on a geographical seesaw, heading up and down the north-south interstates.

While at Virginia Tech Sisson worked with Louthan and McNitt in their environmental degradation of engineering materials laboratory. “I really enjoyed working with Mac and Rich. We did some good work and had a real good time,” Sisson says.

After two years, and with a wife and two children, Sisson decided he needed to earn more money than was possible on the Hokie faculty at the time. So he moved his family part of the way home again, landing in New Jersey as a staff engineer for Exxon Chemical Co. This time, his wife Gena encouraged him to return to academia since he was spending more than half of each year traveling the world in his Exxon position. He doesn’t enjoy his “first class plane rides” with the oil giant, but with two small children, he agreed with his wife’s wishes.

So, in 1982, “I told my wife my wandering days were over,” and he settled back in at WPI in Worcester, Ma., on the mechanical engineering (ME) faculty. Within five years he was a full professor, and in 1988 Sisson became the director of WPI’s manufacturing engineering program until 1997. Simultaneously he served from 1990 until 2004 as the head of the MSE program. His administrative skills landed him a third position during this same time period — interim head of the ME program from 1999 until 2000.

Despite all of his administrative duties, Sisson remained active in research and in teaching throughout his career. He focuses on the applications of thermodynamics and kinetics to materials processing and degradation phenomena in metals and ceramics. He has more than 160 publications and an equal number of technical presentations on topics ranging from synthesis of nanocrystalline ceramics to hydrogen embrittlement of high strength steels to heat treating and quenching of steels and aluminum alloys.

Among his special interests, Sisson is a staunch promoter of the concept of environmentally benign materials processing, an aspect of green engineering. “As a heat treater, we have to rethink everything, all the way back to the decision to use an electric furnace or a gas-fired furnace, whether to quench in oil or water, etc.

“We must have a holistic view of the entire life cycle of materials. And we have to understand that true environmentally benign processing requires an up-front commitment at the start of the design process,” he says.

Sisson has advocated his green engineering strategies through his involvement in the American Society of Metals (ASM) International. Sisson became a fellow of the American Society for Materials (ASM) International in 1993 and an ASM Trustee in 2002. He is currently the vice president of the ASM’s Heat Treat Society, and has written columns about his thoughts on sustainable engineering, trying to involve the greater materials engineering community.

In the area of heat treatment, he is the principal investigator (PI) on the Center for Heat Treating Excellence’s projects “Quenching, Understanding, Controlling and Optimizing the Process” and “Optimizing the Carburization Process.” He is also a co-PI on the Department of Energy’s funded project “An Integrated Heat Treatment Model for Aluminum Castings.”

He is also a member of WPI’s Metal Processing Institute that has attracted some 130-member companies. For five years (1994-99) he was the director of the National Science Foundation’s Product REALIZATION Consortium. Since July of 2004, as WPI’s George F. Fuller ME Professor, he has served as the director of the manufacturing and materials engineering program, and specifically advises eight of its graduate students and a post doctoral fellow.

Sisson’s green engineering advocacy comes naturally to the outdoor enthusiast. Whenever possible, he spends time kayaking in the salt marshes of Buzzard’s Bay or biking on trails near where he grew up. An athlete during high school, and the son of a physical education teacher, Sisson was a member of the Dartmouth High School track team as a shot putter and a javelin thrower.

Sisson encouraged others to join the track team to his own detriment. “I was the fourth best in the state when I was a sophomore,” he recalls, but then he convinced a friend to join the team who went on to beat him, and leave him with the title of second best at Dartmouth as a high school senior.

Sisson and his wife have two children, Ashton, a veterinarian, and Ted, a former Navy man and now the captain of a private ship and a scuba diving instructor. They also have three grandsons, ages 10, 8, and 6, with whom they spend much of their time.
C. William Smith
Civil Engineering and Applied Mechanics
BS, Civil, 1947;
MS, Applied Mechanics, 1950

Few retirees have the honor of hearing themselves described as an “icon” in their field. One of the most deserving is Virginia Tech’s C.W. “Bill” Smith, 80, whose name is synonymous with its Department of Engineering Science and Mechanics (ESM).

ESM alumnus and benefactor Pat Artis, a 1972 engineering mechanics (EM) graduate, explains some of the rationale for Smith’s prominent status: “During the ’60s and the ’70s, Bill taught experimental stress analysis, the capstone senior level experimental methods and lab course. This was the most time-consuming and difficult undergraduate course in EM. Everyone knew this because Bill, with his trademark cackle of a laugh, made it clear during the first lecture.

“He further explained that anyone who passed the course would be treated to a wonderful dinner prepared by his wife Doris at their historic home in Christiansburg. Like many seniors and after me, that was the most satisfying meal that I have ever eaten. That course also sealed a life-long friendship (with Bill) and focused my career on experimental methods.”

In Smith’s field of research, fracture mechanics, his work is known “worldwide” as are his contributions to the discipline of photoelasticity, adds Robert Heller, an engineering colleague. In recognition of his accomplishments, Smith has received numerous honors including the 1983 M.M. Frocht Award, the 1993 William M. Murray Medal, and the 1995 B.J. Lazan Award, all from the Society of Experimental Mechanics (SEM).

Smith is the epitome of the hometown boy who made good. Born in Christiansburg, Va., he lives today in the same home his grandfather built in 1905 and where he was raised. The 1929 stock market crash forced the sale of the home, but Smith was able to purchase the landmark building back in 1948.

And his commute in 2006 is also another sign of his more profitable times. In the 1940s when he was attending Virginia Tech as an engineering student, he would often hitch a ride on the local mail truck or talk the resident taxi cab driver into giving him the nine-mile ride for a “small fee.” He would then walk from the Cambria taxi stand to his Christiansburg home.

The enterprising youngster also found innovative ways to support himself. When he inherited a large number of mailboxes from the building his grandfather owned, Smith approached Virginia Tech’s Vice President for Finance Stuart Cassell and brokered a deal with him. “The GIs were returning after the end of the war, and they were being quartered at the Radford Arsenal, so Mr. Cassell bought all of my mailboxes for them, and consequently financed my senior year,” Smith recalls. It did help that tuition at Virginia Tech at the time was $40 a quarter.

He garnered some experience his senior year teaching mathematics, and that landed him an offer from Dan Pletta, the EM department head, to remain at the university. He pursued his master’s degree and became a full time instructor in 1948. Upon receiving his graduate degree in 1950, Pletta promoted him to an assistant professor, and Smith taught five classes at a salary of some $200 a month.

“Sponsored research was unheard of at the time,” Smith says, but George Irwin changed Smith’s view of an academic’s life. When Irwin, a member of the Lehigh University faculty and considered to be the “father of fracture mechanics,” visited Virginia Tech to deliver a seminar, Smith candidly recalls his response. “I found his talk intriguing but I had no idea what he was talking about. That got me interested, and I went to some short courses at MIT and the University of Denver Research Institute” to learn more.

Subsequently, Smith became one of the first of the engineering faculty to transition from a strictly teaching role to assuming a teaching and research responsibility in the college. Smith was one of Virginia Tech’s investigators on the 1969 Themis grant, the landmark Department of Defense program that catapulted the University into its current international stature in composite and advanced materials. In 1977 the University recognized Smith for his many achievements, presenting him with its Alumni Award for Excellence in Research. That same year, the SEM made him a Fellow. In 1986 he received NASA’s Langley Research Center Scientific Achievement Award. Other honors followed including election to Fellow of the American Academy of Mechanics in 1991 and of the American Society of Mechanical Engineers in 1996. He became an honorary member of SEM in 2002.

Smith balanced his act of teaching and research well. In 1991, he received the statewide Dan Pletta Engineering Educator of the Year Award from the Virginia Schools of Engineering. “I always enjoyed teaching very much and got along well with the students,” Smith says. He served as an unofficial advisor to the 15 or 20 ESM seniors. And he and his wife Doris, now deceased, would also act as chaperones at the college dances.

In 1992, Smith retired but retained his status as an Alumni Distinguished Professor Emeritus. He continues to come to the office, and keep his research laboratory until recently. “I enjoyed my research — applying optical methods of measurement to 3-dimensional fracture problems. The more I knew about it, the more I liked it. It was like digging a hole. My breadth of knowledge decreased but my depth increased.” With his lab now closed, he spends his office time as the head of the ESM Honorfics Committee.

Smith directed some 50 graduate-level students, helped establish a foreign exchange program with Moscow State University, authored or co-authored more than 150 technical papers, wrote five book chapters, served as an editor for such publications as Fracture Mechanics and the Journal of Theoretical and Applied Fracture Mechanics, and received notable listings in American Men in Science, Who's Who in Engineering, and Who's Who in Frontiers of Science and Technology.

Known fondly as the ESM Department’s “Chaplain,” Smith says he is not “sure where he picked up the nickname, but I guess my ability to see the humorous side of everything had something to do with it. There was also a time when, as the oldest person in the department, I was recruited to form a committee to help solve technical disagreements between faculty members.”

Smith has a daughter Terry who resides in Harrisonburg, Va., with her husband Larry Kelley and their two daughters. His son David lives in Christiansburg with a daughter and one grandson.
Jay Smith III
B.S., Engineering Mechanics, 1962

Jay Smith’s creative imagination never stops. More than 100 inventions are credited to the Virginia Tech engineering mechanics (EM) graduate, as well as the development of an additional four dozen plus video games. The entrepreneur holds 40 patents, most of which are related to the toy or game industry.

“I was always a gadget maker as a kid. I terrorized my mother by taking things apart. One time when I was trying to repair a thermostat to my car, I placed it in a pot on the kitchen stove to see if it would open in hot water. When Mom came home she was horrified. She told me car parts stayed outside and food stayed inside. She was a very proper southern lady,” he quips.

He illustrated his creative genius early on by winning science fairs. In eighth grade he won a prize for making a model of an automatic transmission using an erector set. The next year, his entry, a remote controlled toy car (unusual for the 1950s), won the grand prize at his state science fair. When he competed at a national level with the car, it was stolen, so the contest officials compensated him with a consolation award.

Today, Mr. Smith is the Chief Executive Officer of Play-It-Now, Inc., a Los Angeles based media content company that develops and distributes games using the interactive technologies of cable and satellite television to provide in-home distribution. These easy-to-play games operate by using the remote control for the television.

He remains a kid at heart pursuing fun inventions, but when he was a young engineer, he started his career conventionally. After co-oping at David Taylor, a naval research and development center where he worked on propellers and acoustic sound systems of submarines, he graduated from Virginia Tech in 1962. He received his master's degree in EM from California Institute of Technology in 1963. Although he interviewed with Mattel, a leading toy company, he decided at the time that the prudent choice was TRW: “How could I get this wonderful education and work with toys, I asked myself?”

But after a few years at TRW, Mattel knocked on his door again and asked if he might reconsider. “At the time, I was one of 100,000 people working on the space program. The move to Mattel meant I would become a bigger fish in a smaller pond. The toy industry provided me with more visibility and ways to contribute,” he says.

Before long, he and a small group from Mattel decided to take a different leap and start their own company, Innova. After a year, he moved on to become a founding partner of California R&D Center. He remained for five years and then established Smith Engineering, an entrepreneurial concept invention and licensing firm. Along with Smith Engineering, he founded Western Technologies, a successful developer of toys, entertainment software, and consumer products. Smith Engineering licensed Western’s products. His clients included Mattel, Milton Bradley and Nintendo.

After owning and operating both companies for 19 years, Wanderlust Interactive Inc. acquired Western and changed its name to Adrenalin Interactive, Inc. Mr. Smith was retained as its CEO of the now publicly owned company, and was responsible for its merger into a larger firm. During his tenure at Adrenalin he received the prestigious Jumpstart Award from the Deloitte and Touche Technology Fast 50 program.

Adrenalin was sold in 2000, and Mr. Smith took a break from the fast track and served as a consultant to Water Network, a new digital TV channel for water sports and recreation. He remains a director and a major stockholder as he pursues his new role with Play-It-Now that he founded in 2001.

Mr. Smith is a member of the Toy Industry of America, the Board of Advisors of Santa Monica/UCLA Medical Center, the Santa Monica Rotary Club, and active in several Californian service and charitable organizations. At Virginia Tech he is a member of the Committee of 100, has served on the College’s Advisory Board, and currently serves on the Task Force for the Institute for Critical Technologies and Applied Sciences at Virginia Tech.

Mr. Smith and his wife Susan live in Los Angeles. They have two grown children, Spencer and Stephanie.
In 1963 Sid Smith graduated as a fledgling chemical engineer. He had only one problem – his next dream was to practice medicine. So, he opted to pursue the Hippocratic Oath, and the young honors student, also an all-star high school football player, used his chemical engineering (ChE) degree from Virginia Tech as a stepping stone to attend Yale Medical School.

Today, he makes each of his alma maters proud as a former (1995) President of the American Heart Association (AHA) and the first person to hold the title of AHA’s Chief Science Officer (2001-03). He’s met in the Oval Office with two sitting Presidents of the United States on health matters, and with national leaders such as Tommy Thompson, Secretary of Health and Human Services, on such topics as the standards of cardiac care that should be provided nationally by the medical profession and funding of prescription drugs for the Medicare population.

He is also prominent in world health matters, serving as Chair of the World Heart and Stroke Forum, and as a member of the Executive Committee of the World Heart Federation. “I am throwing my heart and soul into the forum,” Dr. Smith says today. This forum is drafting guidelines, based on a mix of cultural norms and scientific evidence, to reduce risk of heart disease and stroke, now the leading causes of mortality worldwide. Strategies vary drastically from countries such as Ethiopia to China to the U.S.A. Cardiovascular disease in developing nations is on the rise due to the Westernization of their lifestyles, and in fact 80 percent of cardiovascular mortality occurs in developing economies, not in economically advanced western societies. Dr. Smith is quick to point out that groups, such as the World Bank, not traditionally associated with medical issues, are keenly interested in this burgeoning problem because “a country crippled by medical problems cannot enter into the world economy.”

He was a child in Wilmington, Del., when he first considered the two professions. His father, a Virginia Tech graduate, was an engineer at Dupont, but several of his neighbors were physicians, and he had great respect for both careers. Recognizing his interest in science, he pursued his undergraduate degree in ChE. Counseled by one of his father’s colleagues, the esteemed Fred Bull, Chairman of Virginia Tech’s ChE Department, he added some biology courses to his academic load. Yale’s Admissions Office liked what they saw on his transcript, and he was on his way to making medical history. By 1993 Dr. Smith would be selected Physician of the Year by the AHA.

In his early 20s when entering medical school, breakthroughs were occurring with artificial heart valves, transplants, and a variety of new diagnostic techniques used to treat heart disease. These advances allowed Dr. Smith to appreciate the value of his engineering background. “I realized it would be a true resource, particularly with cardiovascular work,” he reflects.

After graduating from Yale Medical School, and completing his residency and fellowship at Harvard University’s Brigham Hospital, Dr. Smith entered the U.S. Navy where he spent two years as a cardiologist at the U.S. Naval Hospital in Norfolk, Va. In addition to serving as Director of the Cardiac Catheterization Laboratory, his duties included caring for returning prisoners of war from Vietnam. In 1973 he moved to Denver to direct the University of Colorado’s Cardiac Catheterization Laboratory. As part of his effort to be responsive to the area’s citizens, he established cardiac clinics in rural areas of Colorado. He recalls rising at 6 a.m., getting on a Frontier Airline prop plane, traveling to an outreach clinic on the western slope, and seeing patients all day.

Four years later he moved to San Diego to head the Department of Cardiology at Sharp Memorial Hospital. He also directed the San Diego Cardiac Center that grew into one of the three busiest cardiac centers in the state. He continued his work in interventional cardiology, participated with the team performing San Diego’s first heart transplantation, and initiated innovative programs aimed at preventing heart disease. During his 17 years in San Diego he was active in community and civic affairs that included serving as President of the Board of Trustees for La Jolla Country Day School and Fleet Surgeon for the San Diego Yacht Club where the America’s Cup Races were held.

Dr. Smith and his wife Lucy returned to the east coast in 1994 when he was recruited to the position of Chief of the Cardiology Division at the University of North Carolina at Chapel Hill. In 2001 he became the Chief Science Officer for the AHA. In 2003 he returned to a full-time role at UNC to serve as Director of the Center for Cardiovascular Science and Medicine. “There is a tremendous need for the academic environment to keep pace with medical changes. The Center for Cardiovascular Science and Medicine at UNC reaches well beyond cardiology. We combine strategies to study the translation of findings from basic science to clinical therapies that improve patient care. A major focus is on the development and evaluation of guidelines for cardiovascular care which are implemented at the national and international level,” Dr. Smith says.

Among his additional credentials, he was a member of the AHA’s national board of directors from 1991 to 1997. He served on the AHA’s Science Advisory and Coordinating Committee and chaired the International Program Committee and the Clinical Science Committee. He is Vice President of the Inter-American Society of Cardiology and is a primary author of The Principles for National and Regional Guidelines on Cardiovascular Disease Prevention and more than 200 scientific articles and book chapters.

In June of 2000, he was awarded the AHA’s prestigious Gold Heart Award. In 2003, he received an Award of Special Recognition from the National Heart, Lung and Blood Institute. At Virginia Tech, he is a member of Ut Prosim and the Committee of 100, and a past member of the ChE and the College-wide Advisory Boards. In 1996, he accepted an adjunct professorship with Virginia Tech’s ChE Department, and he was honored with the Virginia Tech Distinguished Achievement Award.
D. Wayne Snodgrass

**Electrical Engineering, Class of 1962, BS**

**Industrial Engineering and Operations Research, Class of 1968, BS**

D. Wayne Snodgrass’ life changed on Oct. 4, 1957. That was the day the Soviet Union launched Sputnik and shook the world in a startling moment of technological bravado. The New York Times blared, “Soviet fires earth satellite into space,” followed a month later by the Los Angeles Times in full “Sputnik Mania” vibe: “Mystery air objects seen in sky over LA.” The Space Race was on, with no end in sight.

Snodgrass had just started college at Virginia Tech. His mind was set on civil engineering after teen job stints constructing highways, bridges, and school buildings. That was over. He changed his path to electrical engineering. “I wanted to join the fight,” he said, ironically during an interview taking place on the exact day of the 56th anniversary of the Sputnik launch. “You could sit there and watch this Soviet satellite on a clear night, watch it sail over your head. It was just chilling… We were concerned that our country was in trouble.”

The Abingdon, Va., native, raised in nearby Bristol as the son of school teachers, intended to focus on a forestry service career, after exploring the Appalachian Trail. A friend of Snodgrass’ father encouraged the young man to go into engineering, pointing to Snodgrass’ excellent science and math scores in high school. Snodgrass and his dad had frequently watched a nearby large dam under construction by the Tennessee Valley Authority. He accepted the advice.

Snodgrass entered engineering at Virginia Tech, joining “F” Company in the Corps of Cadets. On the side, between studying and his corps duties, he ran varsity track and field, a sport continued from high school. Snodgrass held odd jobs through the year while in school and during summer, working in the post office, on road construction crews, and delivering milk. Upon his graduation in 1962, the Space Race and the Arms Race were in full swing, with high-tech aerospace and defense companies hiring hundreds of engineers. National security was on the line, not profit.

Snodgrass interviewed at several companies and received three offers. The chance to move out west took hold, and Snodgrass chose Douglas Aircraft. He started working on the engineering issues for the design teams and the manufacturing teams. “We were developing systems that no one had ever dreamed of before,” Snodgrass said. He focused on missiles, rockets, and space vehicles.

What he thought was a temporary move to California became much longer and included several states. “I figured that I’d go see what it was like, maybe stay out there for six months or a year and come back to Virginia where I belong,” he said. “Well, I never quite made it back to Virginia other than to visit friends and family.”

Snodgrass said his early career was buoyed by the good fortune of working with some of the brightest minds in the country. “I was thrown into a wonderful environment of committed creative people,” he said. He made friends fast, and worked on several design and development teams. He also met his future wife, Dorothy, who also worked at Douglas, supporting the Apollo procurement, then missile design groups. She hailed from Powell, Wyo., the same hometown of W. Edwards Deming, the statistician who developed statistical process control and changed the world’s manufacturing protocol to focus on continuous improvement.

At Douglas, Snodgrass worked in developing the Apollo and Delta space programs, and then the Nike, Sky Bolt, and Spartan missile programs. After several years he moved into engineering management, a conscious decision as he saw younger, more technologically advanced engineers enter his design teams. “I found that I could lead and encourage the conceptual creators, better than I could compete with them,” Snodgrass said.

By 1967, Douglas merged with McDonnell to become McDonnell-Douglas, one of the largest aerospace powerhouses of the time. Snodgrass also officially finished work on his industrial engineering and operations research degree in 1968, having started on it during his first tenure at Virginia Tech. A snafu rule change made during his undergraduate years prevented him from earning two degrees at once.

Snodgrass also pursued graduate studies in business and engineering at the University of California, Los Angeles, and at the University of Southern California, eager to become equally savvy on the manufacturing floor and in the executive suites. Snodgrass went on to manage several battlefield weapons and missile programs being developed in Alabama, California, Florida, Georgia, and Texas for McDonnell-Douglas.

In 1981 Snodgrass was lured away to Gould Inc., to lead its business development programs, and soon was appointed as vice president and general manager. There he was responsible for developing and producing the Navy’s Torpedoes, Targets, and Sea Lance Standoff Weapon. He led the implementation of continuous improvement processes in design, development, and manufacturing (total quality, six sigma, lean, and supplier teams). With Snodgrass’ leadership, Gould captured most of the highly competitive programs in these weapon systems, developed in California, Ohio, Rhode Island, and the state of Washington.

“Again, I worked with many of the world’s most creative engineers and scientists in naval weapons. These people were truly the world’s best,” said Snodgrass.

As much as Sputnik sent Snodgrass on a different path during college, the end of the Cold War in 1991 also spurred a new path. Systems and technology once used to defend the nation moved to new theaters, with vary-
ing non-defense uses. Snodgrass said much of the early technology and military systems that he focused on had become outdated, and many of the companies had become smaller or folded into other larger corporations.

“Until the 1990s, we knew who our enemy was, and we knew the Soviets were after our intelligence and systems, and that encouraged us to be better and smarter,” Snodgrass said, adding that the reverse was also true. American achievements propelled Soviet technology advancements, creating a back-and-forth cycle.

Snodgrass’ career took him next to Westinghouse Naval Systems, where he was named general manager of antisubmarine warfare and ship systems. There, he oversaw development of naval submarine combat systems, sonars, radars, torpedoes, torpedo defense, and undersea weapons in facilities in Maryland, New York, and Ohio.

The Westinghouse defense business was acquired by Northrop Grumman and he was named president of the latter’s subsidiary Norden Systems in Norwalk, Conn. There he oversaw air-to-ground radar systems and helped turn the underperformer into the profitable leader in airport radars and in defense ground/sea surveillance radars, moving target indicators, and moving target intercept systems.

In 2001, Snodgrass was named as Northrop Grumman’s vice president of engineering and manufacturing for its electronic systems sector. He was responsible for 14,000 employees and 53 separate facility locations spread across the United States, and performing on 250 aerospace and defense programs and 12,000 contracts. His focus was on people, programs, processes, and performance, echoing lessons learned from Deming.

Snodgrass retired in 2004 per policy for corporate officers. Now, young engineers in the field look to him as a mentor, and as a veteran of the Cold War space and arms race as Snodgrass did to older engineers when he entered the field during the Sputnik era. “I was very fortunate to have worked with these top individuals and these performance teams,” he said.

Snodgrass’ efforts are held high by his peers and across engineering. “Wayne’s [combined] disciplines excelled at the highest levels of industrial management,” said F. William Stephenson, emeritus dean of the Virginia Tech College of Engineering. In their nomination of him, Paul Plassmann, professor and then interim-department head of the Virginia Tech Bradley Department of Electrical and Computer Engineering, and G. Don Taylor, the department head of Industrial and Systems Engineering at Virginia Tech, said, “His accomplishments are well known to many in the Virginia Tech engineering community and the national defense industry.”

Snodgrass has since served on the advisory board, including a stint as chair of the Bradley Department of Electrical and Computer Engineering at Virginia Tech, and on the College of Engineering’s Committee of 100. He also has served on the board of visitors for the University of Maryland’s A. James Clark School of Engineering; and is a life member of the National Defense Industry Association, and the Navy League, among other defense-themed boards and associations. Snodgrass also is active in 22 non-profit organizations covering a wide watch of topics close to his heart, including the Methodist church, education, and history.

“Looking back, this could not have happened without the love and support from my family,” said Snodgrass. “My wife, Dottie, and our daughters, Jenn and Kim, who experienced eight relocations, deserve much of the credit. This was a dream career for a Hokie engineer who graduated with less than stellar grades. We are thankful to have received so many blessings.”
Jerry C. South, Jr.

B.S., Aeronautical Engineering, 1959
M.S., Aeronautical Engineering, 1959

Jerry South is one of the pioneers of the Apollo Space Program who helped insure President John F. Kennedy’s determined goal of landing on the moon by the end of the decade of the 1960s. He recalls the July 20, 1969 landing as if it was yesterday. “I watched the television set while on my back porch. I was looking intently for dust as the Lunar Excursion Module settled to the surface.”

Mr. South was concerned about dust because the lunar surface was an unknown factor to NASA engineers as they prepared for the moon launch. He was one of about three of the space program’s engineers who worked on this problem, predicting the consequences of a rocket exhaust impinging on a dusty lunar surface. He worked in the Theoretical Mechanics Division, which also developed the technique of lunar orbital rendezvous to put men on the moon and bring them back safely. “I always loved mathematics and the challenge of breaking new territory. I enjoyed the research so much I almost felt like I shouldn’t have been paid to do it.” the retired aerospace engineer says today.

He was not always as secure about his career choice. After selecting Virginia Tech’s College of Engineering, he was confused by the number of disciplines. He selected civil first but then he saw a road crew installing a sewer line in Miami the summer before attending Virginia Tech. “I knew a CE had to be directing that job,” he smiles. “I switched immediately to electrical, but I thought the lab downstairs in Patton Hall seemed dingy. I liked to draw so in my sophomore year I changed to architectural engineering, but there wasn’t enough mathematics to satisfy me. Then I read the catalog and learned that aeronautical engineering required a ‘high degree of analytical ability.’ That sounded challenging to me, so I switched.” Despite his early indecision, he still managed to earn his bachelor’s and his master’s degrees in aerospace engineering within five years of entering Virginia Tech.

By contrast, selecting NASA Langley to launch his career was an easy choice. “NASA was the holy grail for doing research in aerospace, and NASA Langley was the mother of all of the space centers. It spawned the centers in Cleveland, Ames and Houston,” Mr. South recalls. And his job interview might have been one of the shortest on record. His future boss, Leonard Roberts, heard about the young graduate’s thesis work through Bob Truitt, the AE Department Head at the time, and essentially asked the young graduate in a hallway conversation if he would come work for him.

After four months at Langley, he was called to active duty as a lieutenant in the Ordnance Corps at the Ballistics Research Laboratories at Aberdeen Proving Ground, Maryland. He worked as a special projects officer concentrating on theoretical gas dynamics of high-speed flows. He rejoined Langley in 1961 when his main focus became the “very challenging theoretical research related to Project Apollo, including ablation of heat shields, trajectory analysis, and modeling of a rocket exhaust in a vacuum and its effect on a dusty lunar surface.” During most of his career with NASA, Mr. South focused on the new field of computational fluid dynamics, the science of formulating methods suitable for solving the equations governing fluid flows and aerodynamics on a computer. The quest was for ever-increasing accuracy of the simulations, to perform predictions for situations that could not be carried out experimentally, such as planetary entry, as well as to serve as a complementary method to enhance experimental work to increase reliability of aeronautics and space vehicles.

During his career at NASA, he authored or co-authored over 50 research papers. He served as the head of the Theoretical Aerodynamics Branch, the Analytical Methods Branch, and the Computational Aerodynamics Branch. From 1984 to 1987, he served as Chief Scientist of NASA Langley Research Center. He received numerous awards, including the NASA Medal for Leadership, the NASA Medal for Exceptional Service, and he was elected a Fellow of the American Institute of Aeronautics and Astronautics.

Jerry South is the son of a career naval officer, and was born in San Diego, Cal. As a young child, his family lived in many “cities by the sea,” including Honolulu, but he did most of his growing up in Norfolk, Va. There he attended Granby High School. While at Virginia Tech, he was a member of the Corps of Cadets and served as its President in 1956-57. He simultaneously completed requirements for his bachelor’s and master’s degrees in December of 1958 and headed for NASA. Both degrees were officially awarded in June 1959. He was a member of Tau Beta Pi, Omicron Delta Kappa, and Sigma Gamma Tau.

He and his wife Anda have four children. They live in Kingsmill in Williamsburg, Virginia. He retired in 1996, and spends a lot of time on the golf course studying the aerodynamics and trajectories of golf balls.
Dr. Edgar A. Starke, Jr.
Class of 1960, BS, Metallurgical Engineering

When Edgar Starke, Jr., was growing up, he was the youngest child with seven siblings – all sisters. Reflecting on his adolescence in this female-dominated household, he laughs as he says, “At least, I couldn’t wear the hand-me-down clothes.”

However, the economics of such a large household did produce other drawbacks for him. When Starke finished Richmond’s John Marshall High School, the future member of the National Academy of Engineering (NAE) – the highest honor in the engineering profession – began his first full-time job in 1954 with an entry level position with the Virginia Highway Department. After 10 months, he knew the only way he could afford college would be through the GI Bill so he enlisted in the U.S. Army and spent 22 months at Fort Knox.

As he considered his academic choices, he was intrigued by the career of one of his brother-in-law’s who was a metallurgical engineer. “George Robinson went to Virginia Tech and he was intelligent and successful. He became a mentor to me,” Starke recalls. So the veteran and future academician enrolled at VPI where his roommate was Tom Digges, a current member of Virginia Tech’s College of Engineering Advisory Committee. He says he spent most of his college life studying. But he did manage to combine his technical discipline with one most engineers are notoriously berated for not doing well in – communication skills. Starke served as the civilian editor of the University’s yearbook, The Bugle. He further defied the perceived “norms” of the engineering academic culture by joining the Glee Club, and his well-rounded choice of activities would come to suit him well when his career would later take him to one of the top-ranked public institutions in the country, the University of Virginia.

In order to pursue his goal of becoming an academic, he again sought the advice of Robinson, who suggested he pursue his master’s degree at the University of Illinois at Urbana-Champaign. “After I started taking classes there, I knew that I had received an outstanding background in the fundamentals of engineering at Virginia Tech,” Starke says. Within 10 months he earned his master’s degree, again in metallurgical engineering, in 1961.

In Illinois he also met Donna, the woman he married 47 years ago. He briefly curtailed his goals, becoming a research engineer at Savannah River Laboratory in order to support his new family that would soon include his son John. But his thirst for his doctorate prevailed, and in 1962 he was off to the University of Florida, and again made record academic speed, earning his Ph.D. in metallurgical engineering in two years.

“I liked the flexibility of the academician. I wanted to do research, and I love to interact with people. With students, I would get older but they would stay the same,” he grins. On a more serious note, he adds, “All of us in academia can understand how much we accomplish depends on the quality of our students. Chip Blankenship is an excellent example.” (Blankenship is another Virginia Tech engineering graduate who went on to earn his doctorate at U.Va., with Starke and is
In 1968 he accepted his first academic position at Georgia Tech as an assistant professor, becoming a full professor in an amazingly short four years. In 1978 Starke assumed the directorship of the University’s Fracture and Fatigue Research Laboratory, a position he held until he moved to U.Va., in 1983. Thomas Jefferson’s University recruited him as its Ernest Oglesby Professor of Materials Science and Engineering and a member of its Center for Advanced Studies. This center essentially provided him a three-year appointment to pursue whatever interests he wanted.

However, after a year with the center he was asked to be Dean of the School of Engineering and Applied Science. He recalls he had recommended several candidates to the search committee, but it decided to punt on those applicants and offer the job to him instead. Although he first tried to refuse the honor, he says his wife influenced him. “She said to me that I should take it since it would give me the opportunity to make some needed changes in the school.” So, he spent the next decade perfecting his time management skills between running a premier engineering school and continuing a scholarly research program. “I would meet early in the morning with my students and then do the dean’s job. The research part was the fun part,” he admits. But his management skills did not go unnoticed.

One of his first tasks as dean was to appoint an Advisory Committee from industry and government. Charlie Blankenship, a member of Virginia Tech’s Academy of Engineering Excellence and a former classmate, was a member of this committee. During his tenure as dean, he expanded the Virginia Engineering Foundation, with a goal of raising money specifically for the engineering program, an effort that was slightly ahead of its time in the Commonwealth. Most of the fundraising that was done in the 1980s was at the university level. Starke’s vision allowed him to renovate all of U.Va. ‘s engineering buildings and add two new ones, a major accomplishment for a public sector school in the short span of ten years. “Fund raising was then a poor step child of the engineering school but I knew it was a necessity,” Starke says. “I had to go out and get private funds.”

His fundraising prowess also allowed him to start a program for minorities, providing financial aid and tutoring. “I think one of my greatest accomplishments as dean was increasing our recruitment, retention, and graduation rates of minorities. I had one large donor who gave $250,000 annually to this effort almost the entire time I was dean,” Starke says.

Another achievement that remains intact today, benefiting all engineering schools in the Commonwealth is the Higher Education Equipment Trust Fund. In the 1980s, “the deans of engineering, including Virginia Tech’s Paul Torgersen, worked together to get this funding, and it had a significant impact at U.Va.,” Starke says. Established in 1986 by the Virginia General Assembly, the fund has provided some of the money necessary to upgrade equipment needed for instruction and research. Since a large infusion of equipment was needed in a short period of time, and the state could not afford to pay for it directly from operating appropriations, it concurred with the engineering deans that revenue bonds dedicated for reducing the amount of obsolete technology and equipment was necessary.

While Starke served as dean, U.Va., had a 150 percent increase in its sponsored engineering research and a 50 percent increase in its graduate enrollment. And despite spending more than a fourth of his career in administration, he advised 30 students to completion of their Ph.D.s, and 26 students earned their master’s degrees with Starke as their advisor.

“Throughout my professorial life, I primarily worked with the aerospace industry concentrating on aluminum and titanium alloys. I learned good, fundamental science in this research. My sponsors were primarily the Air Force, Navy, Department of Defense, NASA, and Lockheed. I became interested in the problems they had, and my research became geared toward industry, focusing on real life problems,” Starke explains. Starke also served on NASA’s Aeronautics Advisory Committee and was a member of NATO’s Advisory Group for Aerospace Research and Development where he interacted with scientists and engineers from all NATO countries. He also chaired the National Materials Advisory Board.

Many of the processing procedures Starke developed in his research were adopted by the aluminum and aerospace industry for alloys used in aircraft. Specifically, his work on aluminum-lithium (Al-Li) aided NASA in its use of the alloy for the super light-weight tanks for the space shuttle. As a result of the impact of his work on the actual use of real materials in the aerospace industry, Starke received the International Union of Materials’ Innovations in Real Materials Award in 1998. The year before he was inducted in the NAE for his contributions to materials research.

Other honors he has received include: West German Alexander von Humbolt Award in 1978, NASA’s Public Service Medal in 1996, the 2006 Distinguished Materials Scientist/Engineer Award, and the Structural Materials Award from the Materials Society of the American Institute of Materials Engineers (AIME). He is a Fellow of the Materials Society of AIME (limited to only 100 living members worldwide) and a Fellow of ASM International.

Starke is retiring in May of 2008, but he will retain an office and continue to serve on a number of Ph.D. committees. He is in the midst of writing a book on aluminum alloys, and will continue to consult. Starke says he is looking forward to spending more time with Donna, his wife of 47 years, and his children and grandchildren.

If he is not found in his office, you might catch a glimpse of him riding his thoroughbred, Prince, an ex-race horse. His 10-acre farm adjoins several large farms and he is able to ride for hours without ever crossing a road. His passion for riding started when he moved to the Charlottesville area six months ahead of his wife and daughter, and spent time with his sister who kept a number of horses at her Goochland home.

When he is looking for slower transportation, he also rides an old John Deere 755 tractor, to keep the home front looking good, and he knows Donna has a “big long honey do list” waiting for him.
John F. Sweers
B.S. 1946
Retired Corporate Vice President, The Gap Stores

During the Cold War Jack Sweers was retrofitting Raytheon’s Hawk Missile systems. By the end of his working career, the industrial engineer (IE) was ensuring that the highly touted Gap Stores maintained a complete inventory of its clothing stock in its hundreds of U.S. stores.

The early stages of his professional life also witnessed the introduction of the computer, a dinosaur by today’s standards. And when it was placed in his office, Mr. Sweers overcame many technical challenges and became one of the first members of management in the country to determine how to use a computer for inventory needs.

Mr. Sweers has led a versatile career as an IE, a profession he more or less stumbled upon. After attending St. Bernard, a boarding school in Cullman, Alabama, he returned to his parents’ home in Chicago to help care for an ailing aunt. At the same time, he went to work for the Western Electric Company. His boss was a Virginia Tech IE graduate, and he encouraged the high school graduate to pursue a similar line of work.

Mr. Sweers was accepted as a Hokie, entering as a member of the Class of 1946. He was exempt from the military at that time because of a heart murmur. Due to the War, he had a very small graduating class — about four or five as he recalls. But the small class made the male-female ratio unusually good for him at what was then a predominantly all-male military school. He met and fell in love with Judy Law, also a Virginia Tech student. Three months after his graduation, the two wed and today have a marriage that continues to go strong after 54 years.

During the early stages of his career, Mr. Sweers moved around a number of times, starting as an IE for Doubleday & Co. When he left this company, he was in charge of production control.

But it was in his next job that his career started to soar in the management side. In 1957, he joined P. H. Glatfelter, a paper industry. Glatfelter was the company that presented Mr. Sweers with his first computer, a rare item in those days. Inexperienced in its capabilities, he taught himself how to use the IBM 450 and was soon keeping the inventory figures. As he recalls, the “huge thing” had “no memory” so he had to reconfigure some of its hard drive. He would later use the knowledge he derived from this job to continue to excel in management positions.

For a brief stint, he worked at the Fitchburg Paper Company where he met fellow IE graduate John Grado, also a member of the Academy of Engineering Excellence, for whom the Industrial and Systems Engineering Department is now named.

He moved from the paper industry to Raytheon in 1960 where he met yet another distinguished engineering graduate, Tom Phillips, who would become the CEO. It was a critical time in the Cold War era and Mr. Sweers found himself traveling around the world, making sure that the procedure he developed to retrofit the Hawk Missiles was followed. One of the most prominent of these Hawk Missiles was the Raytheon projectile located in Florida that was aimed at Cuba during the Missile Crisis.

After three years, Mr. Sweers joined Western Publishing where he eventually became the vice president of distribution and assembly operations. Among its products, Western printed the Golden Books, puzzles, playing cards, and boxed games. He spent 16 years with the company until Mattel Toys bought the publishing house.

He shopped around for a new employer, and soon settled on The Gap Stores, where he would remain until his retirement in 1987. In his position as corporate vice president for operations, he contracted with clothing manufacturers from around the world to supply The Gap Stores. He describes the flow of goods from places like Hong Kong and India as a huge logistical problem, and also one that merited a lot of quality control effort. His work allowed him to travel around the world, wherever clothing manufacturers were located.

The advantage of being an IE, says Mr. Sweers, is the flexibility in the choice of industrial jobs.

During his career, Mr. Sweers was also active with the Institute of Industrial Engineers (IIIE). His ascent in the organization culminated in his presidency in 1976 and 1977. Afterwards, he served on its Board of Directors for seven years, and he was named a fellow of the institute.

He served as a member of the Board of Directors of the Salvation Army, of the Kiwanis and Rotary Clubs, of the Industrial Development Boards of Fayetteville, N.C. and Savannah, Ga., and as a member and an officer of the Chamber of Commerce of Hanover, Pa., and Racine, Wisc. He was a member of the Virginia Tech Industrial and Systems Engineering Advisory Board, and he has received the ISE’s Marvin Agee Distinguished Alumni Award. He is also in Virginia Tech’s Ut Prosim Society.
In 1988 Ed Tiedemann seized a chance. He joined a fledgling communications technology company of about 160 people. “I took the risk because I knew the founders, Irwin and Andy, and it was a good time in my career to do something different … It turns out that I got involved at the right time. It was serendipity,” Tiedemann mused.

Today, Tiedemann serves as a Senior Vice President of Engineering, and leads the organization’s worldwide standardization activities. His name appears on some 200 patents. And the number 160 has changed to some 26,000.

Who were Irwin and Andy? They are Irwin Jacobs and Andrew Viterbi, the founders of Qualcomm that has matured today into a global semiconductor giant with 170 plus worldwide locations. They founded the company three years before Tiedemann joined, and now Qualcomm boasts revenues of almost $25 billion annually.

When Tiedemann started at the company, he recalled how he “played” with new technology and new concepts. In some sense the creativity came because cellular communications technology was not well-explored in the 1990s into the early 2000s….We were building real systems and delivering services such as vocoded voice and packet data, and there was a lot of room for innovation.”

Tinkering with technology is something Tiedemann started doing decades before when he was a young boy. He was active in science clubs, putting with what he called “home-brew electronics.” In the 1960s, he was building gadgets, including a counter to measure the frequency of radio signals – advanced for the time as commercial ones cost thousands of dollars. He also participated in the Fort Hunt High School Math Club that won a division championship. “That year, it was the only team in the school that won a championship,” Tiedemann smiled. “As a result, they felt that they had to give us a high school letter.”

An only child, Tiedemann spent a lot of time with his grandfather, a founder of Berkebile Brothers of Johnstown, Pa. “My grandfather was a mining engineering graduate of Penn State, and he went into the contracting business, building many of the rest stops on the Pennsylvania Turnpike, a few buildings at Penn State, and some power plants,” Tiedemann remembered, adding that he sometimes traveled with him to these various job sites.

Tiedemann’s mother, also a Penn State grad, worked in the journalism field in the New York City and Philadelphia areas, and his father taught history and English, mostly at junior colleges and preparatory schools. When Ed was seven years old, his father joined the faculty at the U.S. Military Academy Preparatory School at Fort Belvoir, and the family made their home in Alexandria.

The family’s move to Virginia accounts for Virginia Tech securing the future Qualcomm Fellow, a designation bestowed upon only a few of the company’s personnel, as an undergraduate. “My parents were conservative financially, and so I applied principally to state schools,” he explained. The in-state financial tuition of Virginia Tech was affordable, and in 1971 he became a Hokie.

He continued to build things through college, especially as a member of the Virginia Tech Amateur Radio Association, and developed what would become long-term relations with electrical engineering faculty members Charles Bostian and Warren Stutzman. They are credited with starting Virginia Tech’s research in the satellite communications world that eventually led to Tech being internationally renowned in wireless communications.

Tiedemann was elected president of the student chapter ofEta Kappa Nu, the electrical engineering honorary society, and was a member of Tau Beta Pi and Phi Kappa Phi. His grades came relatively easily for him, but he recalled that he was “always working hard.” During his senior year he took an electrical engineering communications course, and started reading a book on communications theory by George Cooper, a Purdue University faculty member who is considered to be particularly prominent in applying spectrum technology to cell phones, many years before the first commercial cellular network which was based upon a much simpler, analog technology.

With his academic curiosity aroused, Tiedemann moved on to Purdue in 1975 for a master’s degree. He secured a position working with Cooper where he concentrated on bandwidth efficient modulation. He also taught the communications laboratory course. As an extra project, he developed equipment used to teach analog communications, which remained in use for about three decades.

When he obtained his second degree in 1977, the prestigious Lincoln Laboratory at the Massachusetts Institute of Technology hired him. At the federally funded facility that applies advanced technology to problems of national security, Tiedemann “saw the breadth of work” yet to be achieved in the communications technology field. So after three years he decided to combine his work with obtaining a doctorate, working on queuing theory and communications networks. It took him almost seven years to obtain his final sheepskin. Lincoln Lab is credited with developing multiple technologies such as extremely high-frequency communication satellite packages, infrared airborne radar, digital and packet speech technology, and advanced radar systems.

When Tiedemann traded in his job at the prestigious facility of several thousand researchers for an unknown future at Qualcomm in 1988, only a handful of Ph.D.s were part of the team. “I never knew where the job might go but I had read Andy Viterbi’s book, Principles of Coherent Communication, when I was at Virginia Tech,” Tiedemann said. Viterbi was a two-time MIT graduate with a Ph.D. from the University of Southern California. “I was foot loose without a lot of economic demands, and I never regretted taking this chance. It has been a lot of fun,” Tiedemann said. “I love engineering as a profession in the sense that one is always playing with new concepts and technology.
There is great reward in doing this work … We were building real-world systems."

For example, the passionate inventor was instrumental in the design and development of the cellular CDMA (Code Division Multiple Access) system called cdmaOne™. CDMA allows multiple users on the same communication channel, separating them by different spreading codes. Tiedemann also led QUALCOMM’s and much of the industry’s efforts in the design and development of the third generation cdma2000® system. He was influential in getting QUALCOMM involved with Wideband CDMA and in embedded modules. Both cdma2000® and WCDMA are the standards used in third generation (3G) mobile telecommunications networks.

In 2008, Tiedemann received the 3G-CDMA Industry Achievement Award for Industry Leadership from the CDMA Development Group for “his long-running contribution to CDMA development and standardization.”

Tiedemann has moved into management, and has less time to put his ingenious talents to use except in a supervisory way. But he is recently served on one of the first panels to discuss 5G, the next phase of mobile telecommunications standards. “We are still in the research phase and it is not clear what 5G will be. Today, a new “G” takes the industry billions of dollars to get to the marketplace, but as the largest chip manufacturer and a major supplier of basic communications technology, QUALCOMM will be a major player,” Tiedemann asserted.

Tiedemann remembers working on some enhancements for the first generation of cellular, based upon analog communications. He has worked on every “G” since then, helping to take the cellular industry to over six billion subscribers. There are still many challenges and enhancements to 3G and 4G, known to most as LTE.

As if cellular technology isn’t a big enough challenge, Tiedemann is also working on QUALCOMM’s role in the next generation of WiFi, wireless charging capabilities, and automobile communications, such as the European eCall system. He sits on the board of the Open Mobile Alliance, the wireless industry’s focal point for the development of mobile service enabler specifications helping to achieve seamless operations across international borders.

Despite the need to be a world traveler for his company, headquartered in San Diego, Calif., he maintains his primary residence in Concord, Mass. When home, he tries to make the most of his time, staying involved in a number of activities, including Contra dancing, a style originating in New England. The centuries old form of dancing matches well with Tiedemann’s love for the restoration of his 18th Century historic home, just down the street from the North Bridge and the British destination during the first battle of the American Revolutionary War.

He also serves on the Asian Export Art Visiting Committee of the Peabody Essex Museum, of Salem, Mass. This museum is among the oldest archaeological and ethnographic museums in the world, maintaining one of the finest collections of human cultural history found anywhere. Known for its Chinese collections, the Asian Export Art reflects the interaction between artistic and cultural traditions of the East and the West.

At Virginia Tech, Tiedemann spent four years on the College of Engineering Advisory Board, serving as its chair in 2004-06, when the College of Engineering led the creation of the Virginia Tech Institute for Critical Technology and Applied Science. He is also a past member of the Bradley Department of Electrical and Computer Engineering Advisory Board at Virginia Tech, and is a current member of Purdue University’s ECE Advisory Board, and is a current member of Purdue University’s ECE Advisory Board. In 2010 he received Virginia Tech’s College of Engineering Distinguished Service Award, and at Purdue he received its Distinguished Engineering Alumnus award and its Outstanding ECE award. In 2009, he received the Global IT Innovator and Leadership Award from Yonsei University in Korea.

He is the general chair of GLOBECOM 2015, an Institute for Electrical and Electronic Engineers’ flagship conference.
Dr. Robert Tolson
Aeronautical Engineering and Engineering Mechanics;
BS, 1958; MS, Physics, 1968; Ph.D., Engineering Mechanics, 1990

The first Sputnik was launched during Robert Tolson’s senior year as an aeronautical engineer at Virginia Tech. While listening to the Sputnik beeps on the radio, Tolson and his classmates spent that night trying to figure out how a satellite could even stay in orbit. They could not quite get it, but a couple of them decided then that they wanted to work on this new frontier.

Tolson started work at NASA Langley immediately after his graduation in 1958, and he focused on guidance, navigation and trajectory analyses needed to insure that robotic and human missions could get to the moon and back. “So, a couple of years before President Kennedy challenged us to fly a man to the moon, I was exploring scenarios on the computer. The computers were slower than today’s hand calculators and one could almost fly to the Moon and back before a round trip trajectory could be calculated,” Tolson reminisces.

Throughout the 1960s and 1970s, Tolson was a principal or co-principal investigator on several space missions including the Lunar Orbiter Selenodesy Experiment to map the gravity field of the moon. “This early experience with Lunar missions provided the knowledge base for subsequent support and contributions to the Apollo mission,” Tolson says.

After successful human lunar landings, Tolson turned to Mars in 1969. “As navigation manager for Viking, my job was simply to navigate a spacecraft from Earth to a soft landing on Mars,” says the space explorer. Viking had two successful landings in 1976. Later he served on the Viking Radio Science Team that determined Mars’ atmospheric, gravitational, and physical properties.

Similarly, he worked on the Pioneer Venus Aeronomy experiment and three Venus Magellan experiments that explored the upper atmosphere of Venus. He was the originator of the Viking Phobos-Démos Encounter Experiment during which the Viking Orbiters passed within 30 kilometers of Phobos in 1977 and 100 kilometers of Deimos in 1978. The experiment obtained high-resolution pictures of the two moons of Mars and determined their masses. For this accomplishment, he received NASA’s Medal for Exceptional Scientific Achievement.

Much of Tolson’s research on planetary missions was “to look for an anomaly that did not agree with the theory and then explain it. This is where most new understanding and knowledge comes from. We learned a lot of good science in the Viking era,” the aeronautical engineer adds. His work on the Viking project led to an Exceptional Service Medal from NASA in 1977.

Tolson’s career at NASA also included heading the planetary physics branch from 1973 until 1976, and the atmospheric science branch from 1976 until 1982. He spent the next two years as the chief scientist, followed by a six-year stint as the head of the interdisciplinary research office. When he served as the chief scientist, Tolson was the first person to hold the position in an official capacity. The two-year rotational job oversaw a $5 to $6 million research program and acted as an ombudsman for NASA employees. When he relinquished this position, Jerry South, also a Virginia Tech aerospace engineering alumnus and member of the Academy of Engineering Excellence, succeeded him.

Tolson’s 32-year career at NASA resulted in an “addiction to space missions. It was like riding a roller coaster. On almost every mission we discovered something new. And there was a thrill associated with having to find engineering solutions in a fixed amount of time and money.”

“Truly, my most exciting experience was watching the first pictures come back from the Viking landing. The cameras on the Viking lander scanned vertically one line every few seconds. Twenty minutes later the first one, two, then three lines were received on the Earth and were just black, but then we started seeing something. Eventually, we could see large rocks that we had miraculously safely landed among. Without even knowing it, everyone in the room held our breaths as long as we could. After two or three minutes there was not a dry eye in the whole room. So much energy went into that project. It was a real emotional experience, and it remains emotional today,” Tolson says.

Tolson worked part time while in high school delivering papers, driving a school bus, and working at a marine railway. Although he liked science and math, he never intended to go to college. A few months before graduation, a college educator told him about the co-operative education program NACA Langley offered in conjunction with Virginia Tech, and he took advantage of the combined work-academic plan. (NACA preceeded NASA.)

“That was a great program,” Tolson recalls. “I worked on airplane models that were tested in wind tunnels and flown on rockets from Wallops Island.” He authored his first technical paper as a co-op student on the optimal location of pressure sensors on wings to determine pressure distribution. The paper was sent to the NACA Administrator as an example of the work done by co-ops. His next technical paper, during his senior year, won the national undergraduate Minta Martin Award.

He was so impressed with the educational opportunities through NASA that when the time came for graduation from Virginia Tech, the member of seven honor societies selected the space agency so he could pursue his master’s degree. “I could have gotten 50 percent more money if I had gone with industry. In fact, the starting salary was less than what I could have made at my job after high school, but I was able to enroll in the graduate education program.” He earned his master’s degree in physics in 1963 from Virginia Tech.

Tolson later obtained his doctorate in engineering mechanics through the NASA program in time for him to move into his second career as a university professor. So, as he retired from NASA in 1990, he concurrently earned his Ph.D., and joined the George Washington University faculty for the next 13 years. He spent 2004 as the University of Maryland Liaison Professor at the National Institute of Aerospace (NIA), a seven-member consortium conducting advanced aerospace and atmospheric research. Today he is the North Carolina State University Langley Distinguished Professor at the NIA.

“I once heard a “Person of the Week” news story about a cleaning lady in New York City who had lived an extraordinary life. Before the story of her many achievements aired on TV she died. At the end of the story, the reporter quoted an old Chinese proverb: “Every time someone dies, a library burns.” That proverb helped me decide on my new career after retiring from NASA. Helping to train the next generation of aerospace engineers is certainly one of the most continually stimulating things I have done in the last 50 years,” Tolson says.

Needless to say, Tolson is excited about President Bush’s challenge to return to the moon, Mars, and beyond. “Very few people get a second chance to do it all over again and maybe even do it better.”

Tolson and his wife Carol reside in Yorktown, Va.
Hyde C. Tucker  
B.S., Electrical Engineering, 1956

When Wall Street was recording its transactions for 1991, a Virginia Tech engineering alumnus figured prominently. Hyde Tucker, President and CEO of Bell Atlantic International, and a 1956 electrical engineering graduate, scored the third largest business deal on Wall Street that year.

The technology guru brokered a contract that allowed one of the Baby Bells to acquire half of Telecom New Zealand. His Bell Atlantic team invested $1.2 billion, a sum that was matched by the partners Mr. Tucker brought to the table.

“This deal represented the first operating, overseas telecom acquired by a Baby Bell,” Mr. Tucker says. Fifty-seven years old at the time, he needed the energy of a teenager. “I worked more 24 hour time periods during my time in this position than at any other time in my life,” he reflects. “I was trying to invent a new business, a global business. It was tough. Everything was new. It was like being a linebacker on a football team — you are in every play. And there were lots of failures, not just successes.”

The pursuit of success played a pivotal role throughout Mr. Tucker’s life. He started his engineering career because he wanted to prove he could be successful in this academic discipline. “My dad, also an EE from VPI, was skeptical of my academic abilities. I was scared to death entering college. At the time, I felt it was my last chance to succeed.” His self-imposed pressure worked and by the end of his sophomore year, he was 17th in his class of 444 engineering students, so he allowed himself to participate in extramural activities. When he graduated he had interviewed with 14 companies and received 14 offers, a feat he is nonchalant about. “This was not unusual at the time,” he suggests.

Mr. Tucker selected C& P Telephone Company and remained with some form of the communications industry for his entire career including his four-year stint with the Air Force. The year was 1956 and it represented significant changes for the young Virginia Tech graduate: he took his first professional job, married his high school sweetheart, Jo Anna, and was called to active duty. He spent most of his Air Force career in Spain, a country he still enjoys visiting. Senator Margaret Chase Smith made a personal plea to the young lieutenant to remain in the military, but as he recalls, “I was too ambitious. I was not a pilot and I knew a flier would become the chief executive in the Air Force.” He left the service with the Air Force Commendation Medal.

Back in the states, Mr. Tucker wasted no time moving up the corporate ladder at C&P. He served as West Virginia’s state Vice President and led the growth of the company’s net income by $10.3 million in less than four years. He was promoted to Vice President for Information Systems in 1983, Vice President for Finance and Special Assignment for the greater Bell Atlantic company in 1986, Vice President and Chief Operating Officer for C&P Telephone Companies in 1989, President and CEO of Bell Atlantic International in 1990, and Vice President of Operations and Engineering of Bell Atlantic in 1992. He retired from his last job (that was similar to being a chief engineer) in 1995.

The last two jobs represented two of the top positions at Bell Atlantic. “I held two of the jobs I most wanted in my career. When the time came for my retirement, I was more ready than I realized,” he says. However, his retirement just allowed him to redirect his energies. He serves on the Board of Trustees of the Goodwin House, a church related retirement community, and with a host of activities with Virginia Tech’s College of Engineering. He led the volunteer efforts of the engineering alumni in the last capital campaign that exceeded its goal for the College of Engineering by some 33 percent and directed the marketing committee for the college. He was named the College’s Distinguished Alumnus in 1998. He received its Distinguished Service Award in 2002.

JoAnna, his wife of 43 years, passed away after a long illness in 1999. He has four children: Cliff Tucker, Jr., of Washington, D.C., David Tucker of Mooresville, N.C., Brenda Tucker of San Francisco, and Matthew Tucker of Bridgeville, Pa.
James E. Turner, Jr.
1956, Agricultural Engineering

James E. Turner, Jr. is the retired President and Chief Operating Officer of General Dynamics Corp., a member of the National Academy of Engineering, and the current Rector of Virginia Tech’s Board of Visitors.

“Jim Turner is one of the all time great leaders of the shipbuilding industry,” says his colleague Greg Cridlin (Virginia Tech 1968 civil engineering graduate and the current Vice-President and General Manager of Newport News Shipbuilding).

Mr. Turner spent more than 40 years associated with the naval nuclear shipbuilding and commercial nuclear power projects and his work earned him the prestigious 1999 Fleet Admiral Chester W. Nimitz Award from the Navy League of the U.S. The award is given annually to a person who has made a major contribution to the U.S. maritime strength.

Mr. Turner’s career with General Dynamics started in 1988 when he was named Corporate Vice President and General Manager of the Electric Boat Division. He focused his career with this Fortune 500 company on providing the U.S. Navy with nuclear powered submarines of increased capability at reduced costs. He led the re-engineering of General Dynamics’ Electric Boat shipyard organization, processes, and work force to create a technologically integrated team. This effort helped meet the Navy’s demand for more affordable submarines, achieving a breakthrough in low-rate production. The culmination of Mr. Turner’s vision while in this position was the creation of the New Attack Submarine, the first American warship designed solely on computer and considered to be today’s most sophisticated and advanced submarine. It was founded on the integrated product and process development (IPPD) approach, which Mr. Turner pioneered at the Electric Boat Division.

Prior to joining General Dynamics, Mr. Turner served in a series of positions with Newport News Shipbuilding, the last two years as the Executive Vice President in charge of operations. His responsibilities included submarine construction, aircraft carrier construction, and all overhaul and repair activities. Previously, he was Vice President of Operations for a Tenneco and Westinghouse joint venture to build floating nuclear plants.

From 1978 until 1981, Mr. Turner served as General Manager of the Nuclear Components Division of Westinghouse. In this position, he was responsible for the sale, design, and manufacture of large steam generators and reactor core internals for U.S. and international utilities.

At Virginia Tech, in addition to his service on the Board of Visitors and the Foundation Board of Directors, he is a member of the Ut Prosim Society, the Golden Hokie Club and the College of Engineering’s Committee of 100. His professional society memberships include: the Society of Naval Architects and Marine Engineers, the American Society of Naval Engineers, Naval Submarine League, the Navy League of the U.S., and the American Defense Preparedness Association. He is a Bartels Fellow of the University of New Haven. He is a past Board of Directors member of the Shipbuilders Council of America and the American Shipbuilding Association. He is a ’56 agricultural engineering (the department is now called Biological Systems Engineering) graduate and was named the College of Engineering’s Distinguished Alumnus in 1999.

A native of the Isle of Wight, Virginia, he and his wife, Elizabeth, currently reside in the Tidewater region of Virginia.
Sunday dinners with the Vecellio family in the 1940s and 1950s usually blurred the lines between business and personal conversation. Almost everyone at the table was a member of the family business, Vecellio & Grogan, established by Enrico Vecellio, son Leo Vecellio and son-in-law Gene Grogan in 1938. Talk revolved around the various heavy/highway construction jobs that the Beckley, W.Va.-based company had underway and the challenges they entailed – weather issues, labor shortages, inflation and other such concerns.

Today’s patriarch, third-generation contractor Leo Vecellio, Jr., remembers these conversations well; in fact, they are some of his earliest childhood memories. The spirited discussions fascinated him, stirring his interest in the business he would eventually join. With the remarkable growth of the family business over the years, though, Vecellio & Grogan is just one topic of conversation these days. Leo and his wife Kathryn, along with sons Christopher and Michael – who represent the fourth generation of Vecellio leadership at the firm – are the owners of the Vecellio Group, a well-integrated network of companies and divisions with operations in heavy/highway contracting, commercial aggregates mining, petroleum logistics and more. The group is regularly listed among America’s top 200 contractors and among the top 25 in transportation construction. During the past 30 years, the Vecellios have transformed the group by adding aggressive growth strategies to their core values of integrity, quality and service, extending their reputation for success into new market areas and business ventures.

As a young boy, Leo Vecellio, Jr., felt the excitement of the construction industry call out to him through the voice of his father. It was “a thrilling thing” to be asked to ride along to jobsites, he recalls. During high school he worked summers with the company, developing his industry knowledge and laying the foundation for his career. He excelled in math and science and when he graduated with his class of 470 at Woodrow Wilson High School in Beckley, he served as the salutatorian.

His father had graduated from civil engineering (CE) at Virginia Tech in 1938 and “may have been more than subtle” in recommending the school, Leo Jr., recalls with a smile. It was a good fit for him, though, and the younger Vecellio entered Virginia Tech as a member of the Corps of Cadets in 1964, the first year military enrollment was optional. “The discipline and order of the Corps has stayed with me throughout my life,” he says. His stint as chief judge of the university’s Honor Court also helped mold the traits of this future business icon.
Leo Vecellio, Jr., graduated with distinction from the Air Force ROTC program on a Friday in May of 1968, then had exactly one weekend to drive to Atlanta and settle into a new apartment before starting graduate coursework the following Monday morning at Georgia Tech. Every minute counted, as the Air Force allowed him only 12 months to finish his CE master’s degree in construction management, with a business minor. He had overloaded his coursework as an undergraduate, often taking a course or two beyond the suggested maximum curriculum load, and he took the same approach in graduate school.

Having only two days off between his undergraduate and graduate work was not a problem either. “I have a Type A personality,” Mr. Vecellio explains. “I have always had a lot of drive, and whenever I am in a new place, I figure out my goals and work to excel. It was either inherited or a virtue learned at home, where excellence was always demanded.”

A year later, with master’s degree in hand, the 22-year old reported for active duty, planning and designing Air Force construction projects in the Philippines, Southeast Asia, Florida and California. Among his military projects were the design of various launching pads and tracking stations for the U.S. space program. After completing his tour of duty, he joined his father in the family business. His grandfather Enrico and uncle Gene had passed away by then, but his aunt, Erma Vecellio Grogan, continued her involvement in the company’s administration. Operations had expanded to include coal-mining, and even more changes were on the way. “This was in 1973 and the company was in transition. We had just acquired the largest asphalt operation in the state of West Virginia. I started looking for ways to further diversify, and later that decade championed the company’s expansion into Florida,” Mr. Vecellio says.

The 1979 acquisition of West Palm Beach-based heavy/highway contractor Rubin Construction, later renamed Ranger Construction Industries, marked the start of a remarkable growth period that has seen the company’s expansion into Florida, Mr. Vecellio says.

The philanthropy of the Vecellio family is well known. Mr. Vecellio is president of the Vecellio Family Foundation and a former trustee of the Beckley Area Foundation. “I was blessed. I didn’t have to hold down a job while attending college and I had no student loans to repay. I have always wanted to help others achieve their dreams as well,” he explains. As a consequence of this philosophy, the Vecellio Family Foundation, founded more than three decades ago, annually awards scholarships to high school seniors in West Virginia, where Vecellio & Grogan was founded, and to dependents of its employees.

At Virginia Tech, the Vecellio family has endowed the Construction Engineering and Management Program with a $1 million gift. Mr. Vecellio and his wife Kathryn are members of Virginia Tech’s Ut Prosim Society and the College of Engineering’s Committee of 100. He was inducted into the Civil and Environmental Engineering’s Academy of Distinguished Alumni in 2006.
When Joe Vipperman was four years old, his father was killed in World War II. His mother, who never remarried, became the “solid influence” in the life of Joe and his younger brother. The matriarch was a postal worker in Stuart, Va., a town of just a few hundred, and went on to become the community’s first female postmaster.

She asked her sons to live by a few simple rules: always do your best; always be kind to people; and if you have a choice, always do the right thing. He obviously followed her directives as young Joe graduated as the valedictorian of his high school class.

To help out with the family’s expenses, the teenager worked at the local grocery store where his employer reinforced some of his mother’s set of standards. He recalls a life-long lesson provided to him one day by the store's owner. “I was putting up eggs from a crate to a carton, but only using one hand. My boss said to me, ‘The good Lord gave you two hands, and I am paying for both of them,’ ” he recalls today. After that good-natured reprimand, Mr. Vipperman spent the rest of his life following this counsel.

A third influence in his life also came early. He met Pat, his future wife, in grade school. By high school they started dating, and now she is his spouse of more than 45 years.

As a teenager, Joe says he felt he had the support of the entire community of Stuart, thus making his choice of nearby Virginia Tech rather obvious. His freshman year he shared a dorm room with an aerospace engineering student who, after switching to electrical engineering, seemed to be having more fun than Joe was as a chemical engineer. So he also switched majors to electrical engineering, a discipline he thought at the time to be more suited to his analytical skills. “I had a lousy memory, but if I knew the basics, I could reason things,” he recalls. Joe was active in the Cadet Corps and served on the Regimental Staff his senior year.

After graduation Appalachian Power offered him his first job, but after a month the military canceled all deferments due to the Cuban Missile Crisis. Back in uniform, he was off to a Texas military base. After three years as a lieutenant in the strategic air command of the U.S. Air Force, he returned to Appalachian Power where he would spend a 40-year career in engineering, finance, and various management positions, retiring as its executive vice president of American Electric Power Shared Services, the parent company of Appalachian Power.

His first substantial career move came in 1970 when AEP’s headquarters in New York asked him to relocate to its controllers office, his first step into financial management. “I wanted to go to New York like
I wanted a stick in my eye,” the Virginian native says, but he knew he needed to turn this offer to work in the main office into an opportunity. Unfortunately, his salary did not match the cost of living in the Big Apple, so he and Pat lived in Branchburg, N.J. Consequently, he spent two hours each way commuting by train, forcing him into 12 to 14 hour days. But within two years, he was named the administrative assistant to the president and MIT also named him a Sloan Fellow, allowing him to attend the prestigious university and obtain his master's degree in management. With his MBA in hand, he was promoted to the company’s controller. (Later, he was awarded the honorary degree of Doctor of Humane Letters from Averett University.)

He soon found that the late 1970s was a difficult time to be AEP’s financial wizard as the oil embargo had placed a tremendous financial strain on all utilities. The company was involved in some huge construction projects with a tremendous number of capital needs. Coal had increased from a low of $8 to $10 a ton to almost five times the amount, hitting $40 or $50 a ton, and “there was no way to recover the expenses,” Mr. Vipperman recalls. “I had lots of sleepless nights dealing with regulatory bodies in order to defend rate increases.

“It was like taking oral exams, but at stake was the entire company and its stockholders. Eventually, I started to treat it more like a chess game, and there were more checkmates than checkmated. To raise rates one penny, you’d have thought it was robbery.”

Mr. Vipperman credits AEP’s “long history of good management and its leaders’ focus on forward looking research areas that were extremely beneficial to the business side.” Its erection of 765-volt power lines saved it from building multiple, smaller lines. “Our research and development in generation had enormous payoffs down the road. We also located plants near coal mines to keep transportation costs low.”

Never in the same job for more than three or four years, Mr. Vipperman found his four-decade career with AEP never got stale. “I was always learning,” he says. Through two different assignments, he spent a total of 16 plus years in the Columbus, Ohio headquarters where AEP moved to from New York, with a period of six years back in Roanoke as president of AEP’s Appalachian Power operating subsidiary. When he retired, the Vippermans moved to their current home on Smith Mountain Lake as the Commonwealth has always held their heartstrings.

Over the years, he has spent many volunteer hours with his alma mater, serving on the College of Engineering’s Advisory Board twice, the Electrical Engineering Advisory Committee, as well as co-chair of the Alumni Task Force responsible for launching the University’s Institute for Critical Technology and Applied Science (ICTAS). AEP announced a $1 million commitment to ICTAS in 2008 in honor of Mr. Vipperman. He currently serves on the Cadet Corp Development Council, and as the Virginia Tech Foundation representative on the Reynolds Homestead Foundation Board.

Among his numerous civic positions, he was appointed by Governor Douglas Wilder as a member of the Industrial Advisory Board to the state, and served as chair of this board under Governor George Allen. He was later named a charter member of the Virginia Economic Development Partnership. His past positions also include chair of the following: Southwest Virginia Coalfield Economic Development Authority Advisory Board, Roanoke Chamber of Commerce, Virginia Tech Foundation Audit Committee, Roanoke United Way, Virginia Coalition for Energy and Economic Development, and the Averett Board of Trustees. He was the president of the SouthEastern Electric Exchange, secretary of the Virginia Manufacturer’s Association, and a member of the West Virginia Business Roundtable.

He serves on the board of directors of Shenandoah Life Insurance Co., the James River Coal Co., and the Friendship Retirement and the Patrick County Educational Foundation. He is a Presbyterian Elder and serves as the Parish Council Vice President of Trinity Ecumenical Parish.

The Vippermans have a daughter, Joannah Saarmaa, living in Boston, Mass., and a son Robert, residing in Hickory, N.C.
L. Preston Wade

B.S. 1955, Civil Engineering
Chairman of the Board and CEO, Wiley & Wilson

Preston Wade is often described by his competitors as “their worst enemy,” says one of his best friends, Robert Jebson, president of Environmental Systems Service Ltd. Over the years, “Preston has proven his business prowess and marketing abilities. Much of his business has been in the area of utilities and Preston is one of the state’s leading authorities on annexation issues, having been involved with approximately 30 court proceedings.”

Mr. Wade, the chairman of the board and CEO of Wiley & Wilson since 1980, began his career as a draftsman and field surveyor in the firm’s Lynchburg, Virginia, office during the summers of 1953 and 1954 while he was a student at Virginia Tech. After earning his B.S. in civil engineering in 1955, having served as regimental commander of the Corps of Cadets his senior year, Mr. Wade then pursued post-graduate work while serving as a full-time instructor of applied mechanics.

Called to active duty in the U.S. Air Force in late 1956, Mr. Wade served as an installations engineer at Eglin Air Force base in 1957 and 1958. He then returned to Wiley & Wilson. His work with the firm of architects, engineers, and planners included engineering survey planning and design work primarily for civil and environmental type ventures. These include water supply and treatment, sewage disposal facilities, dams and highways, storm drainage facilities, utilities distribution systems, numerous state agencies and installations, and a variety of industries.

In 1964, Mr. Wade became an associate member of Wiley & Wilson and was named a partner and director of project management and construction administration in 1969. He was named president in 1973 after the firm was reorganized from a partnership to a professional corporation, and in 1980 he was elected Chairman and CEO. Wiley & Wilson has offices in Lynchburg, Richmond, Tidewater, and Northern Virginia and does a variety of engineering, architectural, and planning projects throughout Virginia and selected states.

Wiley and Wilson is particularly noted for its pioneering efforts in the design of printing plants. A critical component of the printing operation is to ensure that there is no movement in foundations since they might cause faulty registration alignments. Wiley and Wilson’s design became a model for the U.S., and it designed numerous plants around the country. The company also developed the design of a solvent recovery system to recapture volatile vapors from the ink drying process, preventing these poisonous vapors from entering the atmosphere.

Another environmentally oriented design credited to Wiley and Wilson is its work to revamp the City of Lynchburg’s combined sewer overflow lines. When cities first developed, it was accepted practice to combine storm and sanitary sewers. With today’s criteria for treatment dictating the need to separate the two systems, Wiley and Wilson developed cost-effective designs to revamp the old method.

Mr. Wade is registered as a professional engineer in 19 states and the District of Columbia. He has served his profession as a former Director of the National Society of Professional Engineers and President of the Virginia Society of Professional Engineers (VSPE), and in addition is a member of the American Society of Civil Engineers, Virginia Association of Professions, Tau Beta Pi, Chi Epsilon, and Omicron Delta Kappa. VSPE recognized Mr. Wade’s contributions with the society’s Distinguished Service Award in both 1971 and 1980, and named him the Virginia Engineer of the Year in 1982.

An active community leader, Mr. Wade is a past long-time member of the advisory board of the Salvation Army in Lynchburg, former board member and past President of the Greater Lynchburg Chamber of Commerce, past board member of the Lynchburg Fine Arts Center and of the YMCA of Central Virginia, and a former member of the advisory board of the Miller Home of Lynchburg. He has been a deacon, elder and Sunday school teacher at the Quaker Memorial Presbyterian Church. He is also a past board member of the Virginia Chamber of Commerce.

In service to his alma mater, Mr. Wade has been a member of the College of Engineering’s Committee of 100 since its inception and served on its initial Advisory Board. He is a member of the Ut Prosim Society, President’s Council Membership Committee for Lynchburg, and the Virginia Tech Economic Development Advisory Board. In the past, he has served on the board of directors for the Alumni Association and as the annual fund chairman for the College of Engineering. In 1984, he established the L. Preston Wade Endowed Professorship in Engineering.

Preston Wade and his wife, the former Jett Gale Preble, live in Lynchburg and have three daughters and three grandchildren.

As Bob Jebson reflects on his friend of more than 45 years, he says, “Preston is the epitome of the ultimate politician, a person who loves to tell a story, and a man who really enjoys dancing. And he’s actually never really left Blacksburg. He always is referring back to VPI.”
Lori Wagner
Chemical Engineering, Class of 1982, BS
Chemical Engineering, Class of 1987, Ph.D.

Lori Wagner is anything but stereotypical. A tall, attractive blonde, she was a majorette in high school. But after school hours and on weekends the teenager would work alongside her dad, operating power equipment as they constructed a new deck or some other homeowner’s project. She really preferred the times they greased their hands, working on engines.

She attended a high school in the 1970s in Connecticut where some 90 percent went on to college, but her math and science teachers were not exactly shining stars of equal opportunities. Despite Lori’s expressed interest in chemical engineering, her authoritative math teacher literally informed her that she “would never become an engineer,” and that she “should consider something else.” One teacher even labeled her as a “girlie girl.” Her mother thought otherwise, and mothers are usually right.

Today, Dr. Wagner’s name appears on more than 30 patents. She has a security clearance to conduct some of her work at Honeywell. When she meets a soldier who says the material she helped produce and commercialize saved a life, she is energized.

Higher education was of prominent importance to the Wagner family. When Lori and her younger brother were born, their parents did not have college degrees but her dad possessed a great skill set as a repair technician for Xerox. Lori’s mom worked at the University of Hartford, providing her with an opportunity to attend college at night and get an associate degree.

So there was never a question that Lori would attend college; only a matter of where in the northeast she might go. Her parents organized her weekend tours to visit some two dozen colleges and universities, ranging from preppy schools to MIT. Her mom even devised a matrix of what was important for the final decision.

But before she committed to a school, a family friend told her and her parents she needed to check out Virginia Tech. Her parents argued the distance was too great, but they eventually relented. These northerners had never seen red buds before and Interstate 81 in Virginia was lined with these eye-catching, red-pink flowering small trees as they drove south to Blacksburg in April. By the time they drove the 600 miles back, Lori had narrowed her choices to MIT and Virginia Tech.

A weekend at MIT cemented her choice. The Boston school provided an escort service, not allowing its recruits to walk alone in the city. “That was a huge change for me and I decided I couldn’t live in that environment. It was a defining moment,” Wagner recalled.

So, she collected her National Merit Scholarship, added on a Pratt Scholarship from Virginia Tech, and moved in to the seventh floor of West Ambler Johnson dormitory. In terms of academics, she admitted she was “a bit of a nerd” constantly studying while the rest of the girls on her hall pursued other majors. “I made some great girl friends, but in terms of engineering classes, I only had guys as friends.” That was because in the late 1970s, only about 10 percent of her chemical engineering classmates were female.

As Lori completed her bachelor’s degree, so did her mother at Rhode Island College. In tandem they went on for graduate degrees. “My mother hammered the Ph.D. into my head. She had a goal for me, and I said simply, ‘Okay, Mom.’”

Despite looking at numerous universities around the country to do her graduate work, all conversations pointed back to Virginia Tech. “I wanted to do polymer extrusion, and everyone told me I needed to talk to Don Baird,” Wagner said. “I knew I wanted to go into industry, and do more applied work than theoretical, but I also knew the Ph.D. would help if I ever did want to return to education.”

She started her graduate work with Baird, a chaired professor at Virginia Tech, in 1982, but became a little sidetracked, marrying her husband of now 30 years in November of 1985. Steve, also a chemical engineering graduate, had already taken a job in Richmond with AT&T. After they wed, she returned to Blacksburg for six months, not particularly enamored with starting her marriage some 200 miles from her husband. “I lived in a furnished studio apartment, really a one-room converted hotel room. I was doing something I liked at work so I think I lived with a glaze on during that time. We would do some 48 hour runs, get results, analyze, and sometimes rerun.”

Wagner found a way to join her husband before her Ph.D. defense occurred, landing the job with Allied of Richmond, Virginia. She took the position on blind faith because she trusted the person who would become her boss. Her first task was a secret research and development project on a new high performance material. All the newly-wed asked was, “an assurance that what I would be exposed to” would not be harmful. She defended her doctorate some six months after she started working.

Wagner’s work at Allied has transferred through two buyouts. First, the company was sold and became Allied Signal. Subsequently, Honeywell assumed ownership. Her first position was a process engineer that gave her the opportunity she craved, evolving products from the pilot stages to commercial production. Her Ph.D. in polymer extrusion was paying dividends.

She moved into her first management position within four years, supervising the process development group for Spectra® fiber and Spectra Shield® materials. Four years later she became technology manager of these Spectra® lines, equipped with a $3.5 million budget for the product and application development for the Rope, Cut, and Armor market segments for Spectra®. After two years, she became the PEN technical manager, leading the scale-up efforts for the commercial production of PEN fiber. Other
positions in the company allowed her to be the senior customer technical representative with key tire accounts such as Firestone, move into global business and applications for the performance fibers group, manage an $8.4 million budget for the advanced fibers and composites group, and become the armor industry technical leader for the advanced fibers and composites group. In the latter position, Wagner served as the key project manager for innovative new technologies for the military and law enforcement agencies.

After she commercialized three new hard armor products and two new soft armor products related to the SPEAR vest program, Honeywell named Wagner the special projects leader for the advanced fibers and composites group in 2012. She now works on intellectual property for Honeywell, investigates possible mergers and acquisitions, develops new funding mechanisms and business relationships, and leads key project initiatives.

“I was able to move into bigger roles as I got involved with new products,” Wagner explained. “I needed to understand the market place … and the marketing in conjunction with the technologies.” As her positions evolved, Wagner became a recognized expert in her field of supplying high-performance fibers that make bulletproof fabrics. The various forms of body armor have saved hundreds of lives in recent wars including Afghanistan and Iraq, and are also now being used by first responders and civilian defense team members.

The Spectra® product lines for Honeywell include blast-containment blankets, blast resistant suits, commercial airline cockpit doors, and armor plating for police and military vehicles. A number of these patents contain Wagner’s name.

“We have had a number of breakthroughs in terms of our work. And getting the products from a pilot scale to a promotional scale has allowed us to get volumes of our products penetrating the commercial marketplace,” Wagner said.

Along the way she has met a few more folks like her high school math and science teachers. The first time she held a technical lead for a scale-up of some equipment, she was ten weeks pregnant with her first daughter Samantha, and had not yet told anyone of the new addition. One of her co-workers, as soon as her pregnancy was announced, asked when she would be leaving the company.

She recalled today how she said, “having a baby is not a death sentence” and went on to fulfill the requirements of her employment. Her second daughter, Sierra, was born three years later. Both went on to join the Hokies, with Samantha becoming engaged at a Wagner family football tailgate party in 2014.

“Dr. Wagner has given unusually strong service to her alma mater. This service began in the Department of Chemical Engineering, continued as a member and chair of the College of Engineering Advisory Board, and then rose to membership of the University’s Board of Visitors,” said David Cox, chemical engineering department head.

In fact, Wagner helped found the chemical engineering advisory board at the request of former department head Bill Conger. Her bosses were supportive of her spending more time on campus because since the start of her career, she served as Allied’s liaison to Virginia Tech, and continued in that role with Honeywell. She had developed a great pipeline, attracting top performing Hokies to her company.

Today, she remains an active part of the department’s board, but she has rotated off her stints on the BOV and the college board. On the former Wagner chaired the academic affairs committee and on the latter she served one year as chair. She also was a member of the Minorities in Engineering Advisory Board, again spending one year as chair.

She received the Richmond Joint Engineering Council Engineer of the Year award in 2007, the Outstanding Service Award from Virginia Tech’s College of Engineering in 2001, and its Outstanding Woman Graduate in 1996.
Hobart A. Weaver
Mechanical Engineering
Class of 1950, BS

In 1979, Fortune Magazine designated Western Electric of Richmond, Va., as one of the 10 best-managed American factories. The facility was just one of the many that are listed on Hobie Weaver’s resume garnering great success. From orchestrating the blueprint of a new plant to leading his teams to dramatic sales increases in the production of printed and multi-layered circuits, Mr. Weaver, a 1949 mechanical engineering graduate of Virginia Tech, was sought after for his vast consulting knowledge and managerial skills.

During the first six years of his professional career, from 1950 to 1956, with Western Electric in Greensboro, N.C., the manufacturing arm of AT&T, Mr. Weaver held a manufacturing engineering position. This was the beginning of a long, prosperous relationship with the global company and his prolific career.

“I was engaged in building military equipment for the U.S. Navy, like navigation and fire control systems for naval guns, or rather big warfare systems for fire control on navy battleships,” Mr. Weaver says.

From 1957 through 1962, the Virginian native participated in groundbreaking work on Project Nike, developing a line-of-sight anti-aircraft missile system. The missile’s first-stage solid rocket booster became the basis for numerous rockets, including the Nike Hercules missile and NASA’s Nike Smoke rocket, used for upper-atmosphere research, which ultimately led to Nike Zeus, the Anti-Ballistic Defense Missile (ABM) System.

A new challenge was presented to Mr. Weaver and his team when AT&T informed the government it no longer wanted or needed to build military equipment, as numerous other companies were replicating their products. Instead the company’s management wanted to provide telephone equipment, including a new technology of printed circuits. Bell Laboratories, another subsidiary of AT&T, would be the brains of the operation with Western Electric, the manufacturer of the goods, and with Mr. Weaver managing this innovative venture.

He was promoted to plant manager in 1971, supervising some 1,600 employees. He led a smaller group to research printing circuit technology, which was the chemical process of reducing wiring diagrams on copper sheets to individual wiring of copper circuits for application in products for AT&T.

Mr. Weaver and his team soon found the Greensboro plant was too small for the high demand of printing circuit technology. Consequently, in 1973, AT&T built a new plant in Richmond, Va., naming him as the manager. Nine years and $80 million later, the Richmond plant, originally a 225,000 square foot facility was increased to 400,000 square feet.

While living in the Richmond area, he was very active in community affairs. He was elected to two terms as chairman of the board of the Richmond Metropolitan YMCA. He served on the board of directors for the Bank of Virginia and the Richmond Memorial Hospital. At the request of President Gerald Ford, he served as chairman of the National
Weaver was asked to relocate to company headquarters in the congressional hearing. In the reorganization plan, Mr. Weaver was to serve as a technology witness for Western Electric at quite honored when the legal department of AT&T asked preparations as a result of an anti-trust suit. Mr. Weaver was to acquire an additional $100,000 grant for Arp's research.

In 1978, AT&T transferred Mr. Weaver to Winston-Salem, N.C., to manage three plants, one in Winston-Salem, one in Greensboro, and one in Burlington. These three operations were employing approximately 12,000 people, including approximately 450 engineers.

During his time at Western Electric, Mr. Weaver met F. William “Bill” Stephenson, founder of the Academy of Engineering Excellence and the college's electrical and computer engineering advisory board, as well as past dean of engineering. Then, Stephenson was an untenured faculty member, “begging for equipment from industry and government,” in developing what is now the Hybrid Microelectronics Laboratory in Randolph Hall, Stephenson recalls.

“Hobie responded to my plea to Western Electric by visiting my fledgling facility, [used] his extensive knowledge of flexible circuitry to assess my most critical needs, and then [searched] the company’s surplus equipment lists until he located suitable items, to be donated and used at the Virginia Tech laboratory. I will always remember the special care Hobie took to help me succeed,” says Stephenson, now retired.

Mr. Weaver also found additional equipment for the establishment of Virginia Tech's vibration lab.

And, during his visits to Virginia Tech, Mr. Weaver had the opportunity to meet professor Leon Arp who wanted to show his latest research project. “As we were walking thru the lower floor of Randolph Hall, I saw a cage with two beautiful white rabbits, asked if he were starting his own bunny club, and if he was, he should count me in,” jokes Weaver.

Arp explained he and his wife had recently had a child born with a respiratory defect. The professor had sadly learned there wasn’t a respiratory system sensitive enough to aid this type of problem in newborns. But, he did find rabbits have a respiratory system similar to infants. He needed the funding to continue to conduct research. Within the next 30 days, Mr. Weaver had successfully obtained $50,000 grant from the Western Electric fund with the assurance that he would also get a grant the following year.

With Mr. Weaver's continuing aid, Arp made successful progress with his project, and soon he was presenting the success story in several conferences around the world. Mr. Weaver was so enthusiastic about Arp's efforts that he arranged for the AT&T medical director to visit Blacksburg for a demonstration of the project. Consequently, he was able to acquire an additional $100,000 grant for Arp's research.

In 1982, Bell Systems started to break down its operations as a result of an anti-trust suit. Mr. Weaver was quite honored when the legal department of AT&T asked him to serve as a technology witness for Western Electric at the congressional hearing. In the reorganization plan, Mr. Weaver was asked to relocate to company headquarters in N.Y. He didn't want to move north to a cold climate and had offers to consult, so he chose to retire for the first time.

Later that year, when consulting for Tropical Circuits in Fort Lauderdale, Fl., a company desperately needing help managing the operation, Mr. Weaver was offered the position of vice president of sales and marketing. He reentered the work force and moved his family further south to the sunshine state. He became an active part owner of the company and eventually wanted to buy out the business. He was turned down and left shortly thereafter, but not before he led the company to increase sales from $9 million to $33 million in four short years.

He thought he would finally settle down and enjoy his second retirement, but within two months of leaving his position with Tropical Circuits, came an urgent phone call from Bill McGinley, chairman of the board for Methode Electronics in Chicago, Ill., who had known from previous business dealings. The company wanted to merge nine separate divisions into one entity and it wanted the advice of the former AT&T manager. After spending only one week at the locality, Mr. Weaver was offered the position of vice president of marketing and sales. He accepted, but only on the condition he would not have to relocate to the north. The firm agreed; and in 1986 Mr. Weaver moved his family to their beach home in Emerald Isle, N.C.

While working for the Windy City company from his home in the Tar Heel State, Mr. Weaver knew where the electronic industry was truly booming. He suggested to McGinley that Methode Electronics establish an office in one of the most prominent high-tech research and development centers in the U.S. — Research Triangle Park in Raleigh, N.C. And so they did. From 1986 to 1992, Mr. Weaver once again led his crew to a dramatic sales increase, from $45 million a year to an astounding $400 million annually.

The third time was the charm, and Mr. Weaver retired for good in 1992, and although he has “retired” three times, the Virginia Tech graduate is still generous with sharing his knowledge to troubled companies and continues to consult from time-to-time.

He and his wife Mollie of 41 years currently dwell in a golfing community in Glen Allen, Va., to be close to family and their children. They have seven grandchildren and two great-grandchildren. One grandson is a Virginia Tech graduate, with honors in the communications program and another is working towards obtaining his master's in information technology, also at Virginia Tech.

He often recalls, “the good ole days of past when I first came to Virginia Tech as an aspiring baseball player, ready to save the struggling team. To my dismay I didn’t make the team. Instead I became a drum major for the Highty-Tighties, and then later head cheerleader, cheering on the single game winning season football team of 1949.”

“It was tough to cheer on a crowd when you can’t win a football game, but I still had a good time.”

With determination and a positive outlook, Mr. Weaver is always looking forward to the next challenge.
William B. Webber  
1934 Electrical Engineering

William B. Webber was born in Pennsylvania, attended elementary and secondary schools in upstate New York, and then traveled to the Commonwealth in 1930 to attend Virginia Tech. He graduated in 1934 with a bachelor’s degree in electrical engineering, and a commission in the U.S. Army Signal Corps Reserve.

For the next eight years, he was employed in marine sales by Westinghouse Electric Corporation in Pittsburgh, Philadelphia, and New York. In early 1942, he was called to active duty at Fort Monmouth and the Signal Corps Radar Laboratory. When he left the military, he held the rank of Major and Chief, Production Engineering Division. After being discharged at the end of World War II, he moved his family to Portland, Oregon, where he returned to Westinghouse Electric.

In early 1951, Mr. Webber was recruited by one of the founders of Tektronix, Inc. to join with the then 100 employees with the job description of “help Jack,” the other founder. In 1954, he was elected Vice-President. Tektronix was a leader with a high quality, high performance product line, guaranteeing steady high acceptance and growth. Mr. Webber helped start and served as Trustee and Administrator of the Tektronix Foundation, which in 1953 was one of the first corporate giving foundations. He continued in his position with the Foundation until his retirement.

Mr. Webber has had a long and distinguished professional career. His service to the community is equally impressive. He was selected President of the Portland Chamber of Commerce, President of the Portland Youth Philharmonic, Board Chairman of the Meridian Park Hospital, and Trustee of the Independent College Funds of America. He also has served as Trustee and Vice Chairman of Williamette University, Trustee and Chairman of the Oregon Foundation for Medical Excellence, Development Fund Vice Chairman of the Columbia Williamette United Way, and Oregon Chapter Co-Chairman of the National Conference of Christians and Jews.

Mr. Webber is a member of Virginia Tech’s College of Engineering Committee of 100. In 1986, he was named the College’s Distinguished Alumnus. In October of 1998, he was inducted as one of the first eight in the Academy of Distinguished Alumni of the Bradley Department of Electrical and Computer Engineering at Virginia Tech.
William K. Wells  
Mechanical Engineering, Class of 1966, BS

When Pete Conrad, the third man to walk on the moon, told him he owed his life, William “Bill” Wells never forgot it.

Wells, along with other engineers at Hamilton Standard Division of United Aircraft Corporation, had designed and re-engineered a life-saving system that connected to the Apollo Project astronaut’s spacesuit. This Portable Life Support System provided breathable oxygen while removing contaminants, regulated suit pressure, contained a heart monitor, and had two-way voice communication. Wells had the opportunity to collaborate on the design of the backpack-like apparatus and the Lunar Excursion Module soon after college graduation.

Ironically, some 25 years later Conrad retained Wells as his firm’s patent counsel and was able to personally express his gratitude. Turns out Wells had decided to go to law school only after practicing as an engineer for a few years.

Born into a military family during World War II, Wells’ father, an officer in the U.S. Navy, was stationed in Rhode Island. The family later moved to Petersburg, Virginia where Wells was raised and participated on the high school golf team.

His father’s dedication to the service influenced him so much that he pondered a military career as well. For that reason and for its “superior engineering reputation,” Wells chose Virginia Tech and the Corps of Cadets for the first three years of college. In his senior year, he opted out of the Corps as he decided he was “more interested in a technical than a military career,” said Wells.

In 1966, Wells graduated with a mechanical engineering degree with an emphasis in rocket and jet propulsion and went to work with Hamilton Standard Division of United Aircraft Corporation (now United Technologies) as an engineer, designing and testing apparatus for the space program.

While at Hamilton, Wells had continuous interactions with its law division, working on securing patents for the company’s designs.

“I didn’t see myself advancing on my engineering skills alone,” he needed to combine them with something else,” reflected Wells. “The independent nature that the law side embodied appealed to my entrepreneurial side.”

So, he enrolled at the University of Virginia School of Law and shortly after graduation Wells passed the bar and became a licensed lawyer in the state of New York.

The fast-paced environment and rigor of the New York lifestyle proved to be challenging. Putting in 70-hour work weeks as a lawyer at Pennie & Edmonds “was horrendous and pressure intensive,” said Wells.

A small medical device manufacturer (Baxter International) based in Chicago beckoned him to be a part of its legal team. The idea enticed Wells because during that time frame he met his wife Maryellen and began to focus on building a family. But, the move was short-lived as the corporate life was not for him, nor was the Chicago climate.

In 1977, Wells moved with his wife and first daughter to Washington D.C. in a return to private practice. The Wells family located in Northern Virginia where they raised their two daughters Mackenzie and Alexis. He eventually became a partner at Reed, Smith, Shaw, and McClay, a law firm specializing in complex litigation, high-stakes dispute strategic transactions, and crucial regulatory matters. Technology related matters became the focus of Wells’ law practice. There, he developed licenses and enforced patent rights for clients in a wide range of technology areas.

Wells’ standing in the nation’s capital legal community brought him a partnership offer in 1989 from Kenyon & Kenyon, an intellectual property law powerhouse, one of the largest in the world, founded in 1879. He enthusiastically accepted, excited about the challenges ahead and the opportunity to be focused solely on technology related subject matter. His technical engineering knowledge was embraced as most of the lawyers in the firm held graduate degrees in the sciences and engineering.

“Bill’s reputation and skills led Kenyon to bring him into the firm as the first lateral partner addition in over half a century...his education and experience encompassed a wide range of mechanical and electrical technologies in which he advised companies,” said Edward T. Colbert, the current managing partner at Kenyon & Kenyon’s Washington Office.

Because of his foresight, Wells was quickly tapped to serve on the firm’s executive committee, assisting to drive the strategic decisions of the overall firm and creating plans for the office that were instrumental in generating its International Trade Commission practice.

He chaired the Committee on Industrial Designs of the American Intellectual Property Association and served as the delegate at the World Conference in Geneva, Switzerland, alongside U.S. government officials, to arrive at an international treaty for protecting industrial designs. The treaty, the Hague Agreement, currently provides for worldwide protection of designs through an application process and approval from Geneva administration.

One of the most notable and fulfilling cases Wells worked on was representing SightSound Technologies, a small start-up, in patent litigation. In the mid 1980s, Arthur Hair invented an innovative procedure for the electronic sale of digital audio and video recordings. The entire recording industry, including BMG, one of the largest record labels in the world, and Napster, challenged the invention by SightSound’s co-founder as they
thought the new way to distribute music and film would undermine the monopoly of profits reaped from sales.

“Midway through the titanic struggle of litigation, SightSound went bankrupt, but I convinced the firm to continue our representation,” said Wells of his determination and faith in SightSound’s principals.

Several years and millions of dollars later, BMG dropped out of the lawsuit and Wells and his team defeated the record industry. Subsequently, Hair was awarded a patent for the way consumers download music and he sought to enforce that patent against infringers.

During his tenure at Kenyon, as senior partner, Wells managed the firm’s D.C. office. Under his leadership, Wells expanded its size 10 fold. Over his 30 year career, he served high profile clients such as: Texas Instruments, Hitachi, Johnson and Johnson, eBay, Sprint International, Lockheed Martin, Toyota, and Gillette, to name a few in his extensive portfolio. During this time, he evaluated patent portfolios to determine their value in the marketplace, monetized telecommunication patents including cell phones, content download software coding of transmissions, video transmission techniques, as well as health care patents covering navigational surgery using CAT, PET, and MRI scans.

In the community, Wells has served as an advisor to the U.S. Chamber of Commerce Task Force on Intellectual Property and the Association of Small Business Engineering and Technology Companies.

Wells retired from Kenyon in 2006, a melancholy time for all he had affected in his professional career. His “retirement from the firm was a true loss for the firm and his intelligence, thoughtful guidance, and advice are missed,” said Colbert.

Currently, Wells manages his own business Cormorant Technologies, LLC, a patent licensing and investment company, investing and developing new technologies.

One of Wells’ patents includes the development of a portable organic light emitting diode system (OLED), providing a low-voltage, energy efficient light source. The thin, portable light source uses a battery and circuitry that permits re-charging easily. The system is so light it does not substantially interfere with the activity of the user and intended to be used by firemen, police officers, highway workers, bicyclers, and joggers at night. OLEDs are efficient in producing light from source that requires almost no space; they have numerous new applications that heretofore were impractical for lighting. Wells’ company continues to develop new applications for OLED lighting and to seek funding to commercialize patented products.

Born in the smallest state, Wells is far from being small in accolades, achievements, and character.

“When David squares off against Goliath in a patent battle of Biblical proportions, I can think of no better sling and five stones than Bill Wells,” said Scott Sander, President, CEO, and Co-founder of SightSound Technologies. “His intellect, always sharp, launched from a sling of integrity, never failed to hit its mark.”
Dr. John A. White, Jr.  
Industrial Engineering  
Class of 1966, MS

With John White’s vision and tenacity, the University of Arkansas found itself moving towards the billion-dollar club, long before many of its peers, and even some higher-ranked academic institutions. On top of adding more than a dozen new buildings, Dr. White increased the Fayetteville Razorbacks’ nest egg from a mere $119 million to an endowment of more than $860 million.

“The University changed dramatically in 10 years. We created an honors college, more than 2,000 scholarships and fellowships, and 135 endowed chairs and professorships,” says Dr. White, who recently stepped down as chancellor and returned to the teaching faculty as a distinguished professor of industrial engineering.

When the university first asked Dr. White to apply for the position of chancellor in 1997, he declined, saying his job as dean of engineering at Georgia Tech suited him just fine. But the search committee at Arkansas was persistent, and John’s wife Mary Lib finally persuaded him that he should at least consider serving his undergraduate alma mater. He acquiesced, but in his interview he told the selection committee that they would have to convince him that the commitment to increasing the quality of the institution was strong enough for him to leave Georgia Tech and return to his native state to grasp the reins of his undergraduate alma mater. They did.

When Dr. White subsequently recruited the vice chancellor for university advancement who would manage Arkansas’ capital campaign “he said I was crazy to think we could raise a billion dollars,” the engineer recalls. “I believed it was possible and knew that our story would be persuasive to donors. I had observed that the best students at the University of Arkansas were as good as the best students at Georgia Tech. We just needed to increase the number of high-ability students. I have no hesitation to ask for money to improve students’ lives.”

The billion dollar capital campaign, launched the year after Dr. White arrived and concluded seven years later in 2005, included a $300 million gift from the Walton Family Charitable Support Foundation, the largest single gift to a public university in the history of American philanthropy at the time.

As accomplished as Dr. White is, he readily admits “timing is everything,” and he acknowledges that he was unsure of moving into administration from his faculty position. “My strength is in my vision and passion. I surrounded myself with good administrators. My calling was to lead the charge,” he says.

Born in his grandparents’ rural home in Portland,
Arkansas, he came from a family of teachers. Both of his parents taught school — his mother after she paid her way through college by bringing the administrators jars of honey in exchange for her education. His sister became a teacher, and he married a teacher. His great, great, great grandfather was an inventor who Dr. White says flew an aircraft before the Wright Brothers. “He just did not keep it in the air long enough to qualify,” he adds.

“My parents and Paul Torgersen (president emeritus of Virginia Tech) have served as my role models,” because of their commitment to teaching, Dr. White reveals. People still approach Dr. White today to say how “incredible” his parents were as teachers. And when Dr. Torgersen was the Virginia Tech President, he still taught a class each semester. “I decided when I became chancellor, I would also continue to teach. It sent a strong message to the faculty about the importance of teaching and, selfishly it was the best three hours of my week,” Dr. White smiles.

He had been working as an engineer for Tennes-see Eastman Company when an opportunity to attend graduate school at Virginia Tech came along. Its industrial engineering department needed instructors immediately as the Southwest Virginia National Guard had been mobilized in 1963 due to the Berlin Crisis. Herb Manning, the head of the department of industrial engineering at the time, approached Buck Newsome, Dr. White’s boss, asking if he knew of someone who would help him out by teaching during spring quarter. Mr. Newsome recommended his employee and the rest, as Dr. White says, is history. “I often wonder what my life would have been like if Buck had not recommended me to Herb,” Dr. White adds.

After earning his master’s degree under the tutelage of Wolter Fabrycky, now a professor emeritus, he went on to get his doctorate from The Ohio State in 1969, and then returned to the Virginia Tech faculty to teach. He moved to the Georgia Tech faculty in 1975, where his research thrived. In 1982, he became the director of the Materials Handling Research Center, a National Science Foundation (NSF) Industry/University Cooperative Research Center. Considered the most successful start-up center at the time, Dr. White met his five-year goal for attracting industry partners within six months of the NSF designation.

Dr. White also started a logistics consulting company, SysteCon, in 1977, and was able to enlist many of his clients to support Georgia Tech’s Materials Handling Research Center. He sold his company in 1984. That same year, Dr. White was named a Regents’ Professor. In 1987, he was elected to membership in the National Academy of Engineering. In 1988, he was named the Eugene C. Gwaltney Chaired Professor of Manufacturing at Georgia Tech.

In 1988, he made a transformative career path move. Calling them “the most significant years of my professional development,” Dr. White took a sabbatical and went to Washington, D.C. as the assistant director for engineering for NSF. “My eyes were opened. I had been a traditional faculty member with my head down, not looking at the global picture and national issues,” he says. Attracting women and minorities to the field of science and engineering became a very high priority for him. As a result of his work, he was given the Distinguished Service Award from NSF in 1991. The National Society of Professional Engineers named him the NSF Engineer of the Year that same year.

After spending six months as the acting deputy director of NSF, he returned to Georgia Tech in 1991 as its new dean of engineering. His NSF tenure caused him to concentrate on increasing the participation of female and minority students and faculty at his esteemed institution. He also pushed for a strong research agenda.

His reputation in Atlanta landed him on the “Best and Brightest” list, a roster that drew the attention of the organizers of the famed Renaissance Weekend, a private retreat for innovative leaders and their families. There, he met Bill and Hillary Clinton, who continued to encourage him to return to his home state and nominated him for the position of chancellor at the state’s flagship university. Dr. White’s roots as a native of Arkansas were resurrected, and led to his return in 1997.

Dozens of awards line his resume. A few are: the 2006 John L. Imhoff Global Excellence Award from the American Society of Engineering Education (ASEE); the 2005 Humanitarian of the Year Award from the National Coalition for Community and Justice; and several Fellow Awards, including ASEE, Institute for Operations Research and Management Sciences, and Institute of Industrial Engineers. He has served two terms as a member of the National Science Board from 1995 to 2006. In 1994 he won the Frank and Lillian Gilbreth Industrial Engineering Award and the Society of Women Engineers’ Rodney D. Chipp Memorial Award.

He is the co-author of five texts, hundreds of papers, and is a popular invited speaker at national and international meetings. He currently serves as a member of the Board of Directors for J.B. Hunt Transport Services and Motorola, Inc. He has previously served on the Board of Directors for Eastman Chemical Company, Logility, Inc., Russell Corp., and CAPS Logistics, Inc.

He holds two honorary degrees from the Katholieke Universiteit of Leuven in Belgium and George Washington University.

The Whites have a daughter, a son, three granddaughters, and a grandson.
W.S. “Pete” White, Jr.

1947 Electrical Engineering

W.S. “Pete” White, Jr. is one of a handful of Virginia Tech engineering alumni who is a member of the National Academy of Engineering, a recognition of his distinguished career at American Electric Power, spanning some four decades.

A native of Norfolk, Va., Mr. White served in the U.S. Navy during World War II. After the war was over, Mr. White graduated from Virginia Tech's Electrical Engineering Department in 1948. He immediately joined AEP as an electrical engineer. During the Korean War, he served with the Defense Electric Power Administration. Returning to AEP in 1952 as Assistant to the President, he became Office Manager in 1954, and Administrative Assistant to the Executive Vice President-Operations in 1958. He was a Sloan Fellow at MIT and earned a master's in industrial management in 1958.

He transferred to Appalachian Power Company, an AEP operating company, in 1961 as the Assistant Manager of its Lynchburg District. He became Manager of the Lynchburg Division the following year. In 1966 he was named Assistant General Manager of the company, headquartered in Roanoke, Va. Mr. White was elected Assistant Vice President in 1967, Vice President in 1969, and, later that year, Executive Vice President and Operating Head of the company.

In 1972 Mr. White returned to New York and was elected Senior Vice President of Operations of the AEP Service Corporation and a Director of the parent AEP Company. In 1975 he was elected Vice Chairman of Operations of the Service Corporation, and, the following year, he became its Chairman and Chief Executive Officer. In 1980 Mr. White moved to Columbus, Ohio where AEP was relocating its headquarters. Mr. White retired from AEP in 1992. He currently serves as the Chairman of the Board of Trustees of Battelle Memorial Institute.

Mr. White became very active as an alumnus of Virginia Tech, serving on its Board of Visitors from 1981 until 1989, culminating with the position of Rector. He received the University’s Distinguished Alumnus Award in 1989, the William H. Ruffner Medal (for service) in 1990, and the College of Engineering's Distinguished Alumnus Award in 1991. He is a member of the College of Engineering's Committee of 100 and the University’s William B. Preston Society. He is a former director of the Virginia Tech Foundation.

In 1985, Mr. White helped to establish the AEP Professorship of Electrical Engineering in the College of Engineering. Most recently, the W.S. “Pete” White Chair for Innovation in Engineering Education was established by AEP with a generous gift of $500,000. The establishment of this chair in Mr. White's honor allows Virginia Tech to generate new interest in the teaching of engineering and in improving the learning process. It is unique in its flexibility; the chair will be rotated biannually to a new recipient.
Outstanding Young Undergraduate Alumnus

Sharntia Artis  
Industrial and Systems Engineering,  
Class of 2002, BS  
Industrial and Systems Engineering,  
Class of 2005, MS  
Industrial and Systems Engineering,  
Class of 2007, Ph.D.

Sharntia Artis attributes much of her successful life to a host of alphabet soup acronyms: CHROME and C-Tech² in high school, NACME, CEED, and STEM in college, and now E³S in her career.

All of the acronyms include pathways to an engineering career, an interest that started when she was a young girl. As the oldest of two daughters growing up in Chesapeake, Virginia, Artis continually spent time watching her father, a technician at Northrop Grumman, formerly Newport News Shipbuilding, who was always building or fixing things at home. Whether he was working on an engine or repairing a lighting fixture, Sharntia tried to be by his side, eager to learn. As she became old enough, her day was complete if she actually worked with him.

“I used to think he thought I was a boy,” Artis laughed today. “Now I know my dad was wise enough not to label certain jobs for boys or girls.” He served as a role model to her, always working hard, just like her mother who was an administrative assistant at a hospital. “She really pushed education as a priority, always telling me to strive for excellence in everything.”

So when she learned about a Cooperating Hampton Roads Organizations for Minorities in Engineering (CHROME) chapter that was available to students at Oscar Smith High School, Artis was first in line to learn more about science and engineering. This club, a partnership of businesses, government agencies, educational entities, and professional organizations, promoted student access to science, technology, engineering, and math fields.

CHROME introduced Artis to C-Tech², a Virginia Tech College of Engineering camp for high school girls that explores exciting hands-on activities in engineering. “The camp was great exposure for me. I met a lot of other girls who were interested in science and engineering,” Artis recalled.

With her high grades and declaration of interest in engineering, Artis became a very marketable young high school applicant to colleges and universities. “I spoke to people at a lot of schools, but at Virginia Tech, I met Dr. Watford (associate dean for academic affairs). After talking with her, I felt that if something was to go wrong, I had support and someone to talk to. That was important to me since I would be so far away from home.”

As one of the first in her family to pursue engineering in college, she turned things around fast at Virginia Tech. As a freshman she was a mentee in a living and learning community of engineering students in Slusher Hall. The “awesome” experience included having a roommate she met at the C-Tech² camp, Artis said. By her sophomore year, she became the mentor, then advising some seven students a year. She also served as a resident adviser between her freshman and sophomore years.

As Artis introduced herself to the 14 different engineering disciplines available at Virginia Tech, she was slightly overwhelmed at the breadth of possibilities. After she spent the summer of 1998 interning with Chevron, formerly Texaco, when she had the opportunity to shadow several industrial engineers (IE) who really inspired her, she selected the IE major. “They held some high level executive positions that peaked my interest. I became interested in leadership and in helping people,” she reflected.

After interacting with her, Chevron, in turn, wanted to help Artis, awarding her a scholarship as did the National Action Council for Minorities in Engineering (NACME), General Electric, and multiple smaller groups.

Her working role in Watford’s academic affairs office intensified as she stayed on at Virginia Tech. She became a recruiter for the College of Engineering Ambassador Program from 1999 until 2002, acting director of the Hypatia Women in Engineering Learning Community from 2003 until 2005, and director of the Student Support Programs for the Center for the Enhancement of Engineering Diversity (CEED) from 2003 until 2005. In this last position her duties included developing programming and curriculum for science, technology, engineering, and math (STEM) summer camps for sixth through eighth graders. Watford had started all of these programs.

Artis added to her experiences outside the classroom by incorporating undergraduate research into her studies, working with both Eileen Van Aken and Pat Koelling of the industrial and systems engineering (ISE) department. With her curiosity roused, so did her interest in graduate school. After obtaining her bachelor’s degree in 2002, she earned her master’s in 2005 and her doctorate in 2007. ISE Professor Brian Kleiner advised Artis for her master’s thesis, aimed at improving on-line training for older adults. Tonya Smith Jackson, formerly of Virginia Tech, guided Artis’ pursuit of the Ph.D. Her dissertation was on safety training for Hispanics/Latinos in construction.

“I chose this population because the highest number of deaths occurred with Hispanics/Latinos at the time. They represented a small percentage of the construction workers in the field, yet they had the highest number of fatalities. I wanted to explore why...Mostly it was because they were not getting proper training and language was a barrier.” Artis is pleased to note that the culture has shifted and more on-the-job training is available.

With her three engineering degrees, Artis again found
herself in an enviable position with many job opportunities opening up to her. Her initial preference was an industrial job, wanting to get some insight into this sector of human factors engineering before returning to academia. “I thought this would give me more experiences to draw from in the classroom,” she said.

She selected a small consulting company, Aptima, based in Woburn, Massachusetts. Artis held a consulting-type position, focusing on safety and health care issues, continuing to use the techniques she developed in graduate school. Her position allowed her to work with complex military systems, and specifically with fighter pilots, military soldiers, and team-based performance. And she was able to work with physicians on maintaining their skill sets, as they simultaneously held demanding work schedules. As a first year practicing IE, she managed multidisciplinary teams and an operating budget of more than $1 million.

After two years she was ready to return to academia, but she thought making the transition back as a post doctoral researcher would provide her with the most benefits. “I loved working with students, and I was not sure of my path, so I thought I would get more training, allowing me to network and do more problem solving,” Artis said. “I focused on why high-achieving students left the field of engineering, and the impact of summer and student outreach programs.” This two-year stint was at Ohio State University.

From OSU she worked her way further west, landing at the University of California at Berkeley in 2011 as its Education and Outreach Director for the Center for Energy Efficient Electronics Science, currently the last acronym in her life, known as E3S, funded by the National Science Foundation (NSF).

Artis had not been looking at the UC-Berkeley position. The Bay area school recruited her, and as she was contemplating the offer, she sought her mentor’s advice. “Dr. Watford told me to take the job, and when Bev tells you to do something, you do it,” she laughed.

Given this position in 2011, Artis was charged with creating the educational and outreach programs for the center. “I had a short learning curve as I had to create the infrastructure for the center. I had to quickly learn about NSF, the California educational system, and how to develop programs for students to gain research experiences with faculty,” Artis said, describing her experience.

Among her current duties, she is fundraising, establishing new partnerships with various faculty members from more than 40 minority-serving institutions and California community colleges, continually supervising and training some 50 undergraduate and graduate students and postdoctoral researchers for annual programs and events, developing summer research programs, and creating a community college program primarily for first-generation college students, underrepresented minorities, women, and veterans in science and engineering.

“I used to be one of those students,” said Artis, whose name now appears as the author of two books and on more than 25 peer-reviewed proceedings. “Grades do not tell the entire story of my success. Experiences count too.”

In what might jokingly be referred to as her spare time, Artis has participated since 2010 in an entrepreneurial activity called College Liftoff, a planning service that helps students and families create a holistic approach to plan for higher education, including academics and financial information. On its web site, College Liftoff says its class of 2013 saved an average of 63 percent off the sticker price of college.

As Artis hops from coast to coast, visiting family back east, and enjoying the California shoreline, it gives her the opportunity to pursue one of her pastimes – visiting the most beautiful beaches in the world. She also doesn’t mind living in what she describes as sports heaven, the Bay Area where she has become a fan of the 49ers and the Raiders football teams, the Giants and the Athletics baseball squads, and the Warriors basketball franchise.
Richard Bishop
Mining Engineering
Class of 2002, BS

Within the past 10 years Richard Bishop has traveled to more than 40 countries and professionally ascended from an entry-level mining engineer to the vice president of a global resource investment firm.

A natural born leader, Bishop was a high achiever early on in his adolescent years at Prince George high school in Virginia. He served as class president, both his sophomore and junior years and vice president his senior year.

Not only was he respected by class peers, but also by his wrestling teammates who elected him team captain his junior and senior years. Bishop excelled both academically and on the mat. He was crowned district champ in the 189-lb weight class his sophomore and senior years.

Bishop’s sense of dedication was no surprise considering his heritage. His parents, both retired and who currently reside in his mother’s hometown of Statesville, N.C., were successful professionals. His father, John, served as an accountant in the U.S. Army at Fort Lee for 30 years. Sherry, Bishop’s mother, worked in the health field as a cytotechnologist for Southside Regional Hospital in Petersburg, Va., and Chippenham Medical Center in Richmond, Va.

But it would be prior generations on both sides of the family that would impact Bishop’s career choice most. His grandfather on his father’s side was a miner, working in the coal mines of West Virginia after World War II. His great, great, great grandfather on his mother’s side was a mining engineer, born in Cornwall, England. He moved to the United States in the 1800s to oversee the mining operations of the historic Cranberry iron ore mine in North Carolina.

“It was an interesting combination of family background, choice of different engineering disciplines, and promising career opportunities, which led me to choose Virginia Tech as the college I would attend. In addition to being a leading engineering school, Virginia Tech had an excellent reputation, a beautiful campus, exciting recreational activities, and affordable tuition,” said Bishop.

Being mindful of expenses and his interest in economics led the young engineer to take accounting and economics classes while obtaining his bachelor’s degree in mining engineering from Virginia Tech in 2002. While Bishop was enrolled at Virginia Tech, he completed an additional year of mining engineering studies in Europe, spending time abroad in Finland,
the United Kingdom, Germany, and the Netherlands. Post graduation, he continued to further his knowledge in economics at the University of South Florida and mineral economics at the Colorado School of Mines by studying part-time in their graduate programs.

“Mining is highly economics driven. Better knowledge of economical aspects in the mining industry is extremely important,” said the world traveler.

It wouldn’t be until later in his career that he would utilize both the engineering and financial knowledge.

Bishop began his professional career working for Mosaic as a process engineer. After his third year with the company, he was promoted to operations supervisor of its largest phosphate mining operation, with over 250 personnel. He was responsible for making decisions that improved mine production, plant recovery, and grade. Bishop also wrote mine permit modifications for environmental regulatory agencies and developed software for the company to quickly analyze hydraulic efficiencies of their slurry pumping systems.

“My experience at Mosaic was valuable in that I was able to serve in a number of different roles, each giving me a better appreciation for the business,” said the young engineer.

At his next endeavor, Bishop gained experience in underground mining by joining Harrison Western in Denver, Colo., as a project manager. He hired, trained, and managed hard rock miners to complete underground mining construction and mine rehabilitation projects in the western U.S. for clients such as Freeport McMoRan and Barrick Gold. To keep the projects financially sound, he utilized cost models, cash flow forecasts, and scheduling to keep projects on time and on budget.

Because of his successes, in 2008 Bishop was offered a job in Toronto, Canada as a mining equity research associate for RBC Capital Markets. As a part of the award-winning global mining research team, he traveled throughout Canada, Mexico, Chile, Romania, Kyrgyzstan, and Turkey, where he evaluated potential investments. His mining industry background was instrumental in his role with Canada’s largest bank, where he analyzed investment opportunities for institutional investors seeking exposure to the bull market in precious metals.

Since 2011, Bishop has served as the vice president of investments for Aberdeen International, also located in Toronto. In his first role as an officer of a public company, Bishop’s work is based on fundamental research and analysis of the mining sector. He provides portfolio analysis and creates investment ideas for approximately $100 million resource investment portfolio. He frequently travels the world to scout new mining projects, with recent travels to Vietnam, Laos, Cambodia, Myanmar, Indonesia, the Philippines, Mongolia, Spain, Portugal, the DRC, and South Africa.

“My mining engineering degree from Virginia Tech has opened up more opportunities around the world for me than I ever dreamed possible. I am fortunate to have a career that allows me to travel to world’s major cities and combine that with expeditions to some of the most remote corners of the earth. One of the things I appreciate most is being able to wear a suit and tie to work one day and then steel toe boots and a hard hat the next,” said the Virginia native.

His work now often takes him to Mongolia where he and his team are investing in an exploration stage iron ore project. Funded in part by Aberdeen, Bishop has been tasked with getting the venture up and running, and currently serves as president and CEO of the new company.

His achievements have not gone unnoticed in the professional realm. In 1999, he was recognized by Pit & Quarry magazine after he completed a co-op with Granite Construction Company in Sacramento, Calif. In 2006, he was honored with the Outstanding Young Professional award from the Society of Mining, Metallurgy, and Exploration (SME). It was around this time he had served as the vice chairman of the Florida chapter of SME for two years until ultimately serving as the chairman of the SME Florida chapter. His contributions to the engineering community through the SME were recognized once again when he was invited to join the United Engineering Foundation’s Emerging Leaders Alliance in 2008.

Reflecting back on his last ten years, Bishop sees his next ten much the same.

“I have enjoyed and learned from every stage of my career. I have been open to new opportunities and welcomed additional responsibility. I am very content with what I have achieved thus far, and so long as I can continue to grow both professionally and mentally, I’m confident the next ten years will be both fun and rewarding,” said Bishop.
Outstanding Young Alumnus —

Dr. Steven M. Belz

Industrial and Systems Engineering;
BS, 1995; MS, 1997; Ph.D., 2000

When Steven Belz first visited Virginia Tech as a high school senior, “it felt like home” to him. “People were themselves – completely unpretentious. Our campus tour guide was phenomenal. She was very welcoming and made our first visit very enjoyable. This (attitude), combined with the aesthetic value of the campus architecture and the academic reputation, made the attraction to the university immediate,” Belz recalls.

Thirteen years later, in 2004, the College of Engineering bestowed its Outstanding Young Alumnus honor on the industrial and systems engineer (ISE).

Belz is a three-time graduate of the University. He earned his bachelor’s degree in 1995, his master’s in 1997, and his Ph.D. in 2000. “I thoroughly enjoyed the first introduction to industrial engineering course I took. It dealt with aspects of engineering that I found interesting. It put people back into engineering and I found the material very relevant,” Belz explains.

His interest in people is evident from his adolescence through his college days and beyond. As a youth, he had been extremely active in scouting activities, earning the rank of Eagle Scout and spending six summers working on Boy Scout camp staff, first as a counselor and later as the program director. His inclination to advise and assist others remained with him as he attended Virginia Tech. As an undergraduate, Belz spent much of his time as a resident and head resident advisor for Major Williams and East-Ambler Johnston Halls, respectively.

As a senior, Belz accepted an undergraduate research assignment in preparation for attending graduate school. Under the guidance of Jeff Woldstad, Belz assisted a graduate student working on her dissertation research. Woldstad encouraged Belz to apply to graduate school at Virginia Tech; however, by the time classes started the following fall, the ISE professor had taken a position at another university. Woldstad paired Belz with John Casali, who holds an endowed professorship in the college. Belz recalls that joining with Dr. Casali was, “both a fortunate and professionally productive pairing that has grown into a lasting personal friendship.” Casali, the recipient of several research awards, mentored Belz in several human factors research efforts. “We worked together on a number of different types of warning systems with different modalities to present to commercial vehicle operators,” Belz says. For his master’s, Belz worked to identify and evaluate effective representative sounds that would alert a commercial driver, most notably truck drivers, of a potential problem such as straying over a line on the highway or the presence of another vehicle that might be in a blind spot. Companies were interested in this research because a driver in the cab of a truck cannot hear another vehicle’s warning horn.

As he concluded his master’s, holding a Pratt Engineering Fellowship and a General Motors Intelligent Vehicle Highway Systems (IVHS) Scholarship, Belz says he “was having way too much fun.” And his wife, employed at Celanese Acetate in nearby Narrows, Va., was also enjoying her work, so he stayed for his doctorate. This time, he and Casali investigated indicators of drowsiness and fatigue in commercial long haul operators. The U.S. Department of Transportation funded this research, and Belz had garnered an esteemed Dwight D Eisenhower Graduate Doctoral Fellowship to study IVHS, one of only about six awards given nationally each year. He also held a National Institute for Occupational Safety and Health Scholarship in 1998.

His Ph.D. work was successful in identifying differences in behaviors of drivers, as well as concluding that behavior exhibited by drowsy commercial drivers in an actual driving environment, was not consistent with some previous foundational simulator-based research. As initial research in this area, this finding is important to future work in the area of commercial motor vehicle operator drowsiness detection. The relevance and importance of his research is evidenced by the fact that both Belz’s masters and dissertation research resulted in journal publications.

When Belz earned his doctorate in 2000, the two-career family needed to find a company and location desiring the talents of both the chemical and industrial engineer. The same person whom Belz assisted with her dissertation research as an undergraduate encouraged them to apply for positions with Eastman Kodak in Rochester, N.Y. Belz joined Kodak as a senior engineer in the corporate design and usability division. This division centralizes multi-disciplinary usability and design functions for Kodak, including industrial design, graphic design, package engineering, and human factors.

Belz is a lead engineer supporting Kodak’s human factors and interaction architecture efforts for digital imaging services. He has worked on a variety of different digital imaging products and system development platforms. He has also assisted in several advanced development efforts focused on improving the systems and products that support the digital photography experience. The Kodak EasyShare-One wireless camera is one of Belz’ recent projects. “Kodak was one of the first corporations to establish a human factors group,” Belz explains. “Making technology easy to use and creating an enjoyable product experience has long been a goal of the Eastman Kodak Company. Even before human factors had evolved as its own discipline, George Eastman’s goal was to improve photography and make it accessible to the masses.” Belz hopes to extend this legacy and continues to strive towards making Kodak’s digital cameras as user-friendly as possible.

When Belz joined Kodak in 2001, he also happened to be in the right place at the right time for his future interests. Fortuitously, Belz, whose ultimate career goal is to return to academia as a faculty member, was asked to teach a course at Rochester Institute of Technology (RIT) in its industrial engineering program. Since then, he has regularly taught a multidisciplinary course on human factors and system development.

“I wish to ultimately become a researcher and professor in an academic environment,” Belz says. “I have always enjoyed the academic environment, and I believe I will be a stronger faculty member having first spent several years in industry. I wanted to see how engineering and the product development process really worked. Having spent several years supporting product development, I am now gravitating towards leadership and management, helping to set vision,” Belz says.

As he looks toward his long-term goal, Belz is making sure he remains prolific in journal publications. He has published more than 20 journal and proceedings articles, authored more than 30 technical reports, has more than 10 patents pending, and delivered presentations at more than 10 professional conferences. He is the current program chair for the Product Design Technical Group of the Human Factors and Ergonomics Society, and regularly reviews submissions for its various publications. He remains a member of Alpha Pi Mu and the Institute of Industrial Engineers.

Steven and his wife Kelly, also a Virginia Tech alum, live in Fairport, N.Y. and have two boys, Mitchell, 7, and Simon, 4.
Joseph M. Calkins
Mechanical Engineering; BS, 1993; MS, 1995; Ph.D., 2002

During his senior year of high school, Joe Calkins simultaneously attended a local college to get a jumpstart on calculus. When he was an undergraduate in college, he was taking master’s level classes. When he was in graduate school, he was performing double duty yet again, co-founding his own, and now thriving business, New River Kinematics (NRK).

It’s no wonder Virginia Tech’s College of Engineering named Calkins its Outstanding Young Alumnus for 2007. Only one such honor is presented annually, and the main requirement is the alum must not be out of school more than 10 years. With more than 1,000 students receiving an engineering degree from Virginia Tech annually, the field of competition for Calkins was more than 10,000 graduates since 1997.

Calkins, the son of an ophthalmologist, attended high school at Lancaster Christian School in Pennsylvania. Nearby Franklin & Marshall College allowed one student from each high school to enroll in a tuition free class each semester. Calkins selected Calculus I and II since it was not offered at his school. His spare time as a teenager was spent as a computer programmer at Kalas Manufacturing, a local wire factory.

As the time came to consider his choice of colleges, his dad asked his patients for a recommendation for where his son should study engineering. Over a two-week period, they all responded with the name of Virginia Tech. “It was so highly recommended that I applied for early admission, was accepted, and did not even see the campus until I went for orientation. It was beautiful. I loved it.”

Once he arrived in Blacksburg, he heard Charles Reinholtz, an Alumni Distinguished Professor in the College of Engineering, describe all of the mechanical engineering (ME) design projects available to students. “It really got me excited,” Calkins recalls. So, once he entered ME, he started talking with Jan Reiss, who served as the department’s academic counselor until her retirement in 2006. “She had diagrams detailing the sequence of courses, and I was always trying to squeeze something in, staying ahead by taking 18 to 21 credits,” he says.

By his junior year, he started working with Professor Reinholtz on his capstone design project for Babcock and Wilcox Nuclear Technologies (BWNT), now Areva, of Lynchburg, Va. The project dealt with the design and kinematic analysis of robotic manipulators to replace humans in dangerous nuclear service applications.

“Joe clearly stood out as the best of the senior design group, and was such an asset that BWNT hired him for the summer immediately upon graduation,” says Reinholtz. “Upon starting his master’s work, Joe quickly became the key player in all of our interactions with BWNT. Our most significant, but seemingly intractable problem was the real-time correction of errors due to manipulator deflection…Joe not only solved BWNT’s immediate deflection problems, he developed general purpose algorithms and the accompanying software to predict and correct for deflections in virtually any manipulator system,” Reinholtz adds.

“The gains in performance were so significant that BWNT’s parent company, Framatome, took note and hired Joe to travel to France and incorporate the solution approach on its manipulator systems,” Reinholtz says. His outstanding graduate work on robot deflection compensation earned him Virginia Tech’s Paul E. Torgersen Research Excellence Award in 1994.

Calkins explains this time as “fun” because he was given the opportunity “to solve real world problems. BWNT gave us a lot of latitude with a big problem. I really enjoyed developing robot simulation software for them. We’d have brainstorming sessions and BWNT would shoot down the pie in the sky ideas, and we would bring them back up. It was an excellent introduction to the real-world engineering design cycle.”

With his real-world experience, yet still a graduate student, Calkins, Bob Salerno, a Ph.D. graduate, and Reinholtz started NRK in 1994. The company was initially formed to create robot simulation and control software. In the beginning “we chipped in and bought one computer, a Pentium I, and started creating RobotAssist,” Calkins says. The result was a powerful robot design and simulation package.

NRK soon received a contract to provide optimization software for nuclear power plant steam generator replacement. This project provided NRK a glimpse of another market — coordinate measurement acquisition and analysis. The company shifted focus from robot simulation to the development of SpatialAnalyzer™ (SA) to fit this market. The product was initially released in 1996. NRK continues to distribute, support, and expand SA today.

The company grew to a new location — an attic in a doctor’s office in Radford, Va., in 1995. Owning his own business slowed down his education some, but Calkins was able to combine his doctoral research with his company’s thrusts. His research in measurement uncertainty provided a missing element in large-scale metrology, and was implemented in NRK’s SpatialAnalyzer™ software as the Unified Spatial Metrology Network (USMN).

As he helped build NRK, he and Salerno orchestrated the company’s move to a 6500 square foot office building on four acres in Pulaski, Va. In 1994, he also married Kara Goldberg, a 1992 early childhood education graduate of Virginia Tech. They now have three children: Grace, 7, Paige, 5 and Noelle, 3.

Shortly after Calkins received his doctorate in 2002, he and Salerno moved the company headquarters to Williamsburg, Va., with a satellite office in Seattle, Wash. Calkins currently serves as the President of NRK, and as one of its principal software developers.

Over the years, NRK’s SpatialAnalyzer™ product has become the industry standard large-scale measurement software for portable metrology devices. Customers include: Boeing, Airbus, Honda, General Dynamics, Northrop Grumman, Lockheed Martin, NASA, Toyota, United Space Alliance, and Vought Aircraft.
Kristen Casto  
Industrial and Systems Engineering,  
Class of 2009, Ph.D.

Raised as the child of a career Army officer, moving every two to three years, Kristen (Kristy) Casto’s last thought as a slightly rebellious high school student was to make the military her career choice. Today, she is a Lieutenant Colonel with the Medical Service Corps, and audiology and hearing conservation consultant to the Army Surgeon General. She believes she still has a lot of work ahead of her in her crusade to positively impact the hearing health of soldiers.

But her progress has been remarkable. Holding two doctorates, including one from Virginia Tech in the human factors program of industrial and systems engineering (ISE), the mother of two has numerous accolades from her novel and in-depth way of looking at hearing loss that has covered everything from work load, hearing protection, quality of speech, and other related factors.

When she left Virginia Tech in 2009, she became the branch chief of acoustics at the U.S. Army Aeromedical Research Laboratory at Fort Rucker, Alabama. “She completely revamped the branch, tripled the research output of its labs, and made significant improvements in all aspects of operations.

“It is now one of the premier acoustics research facilities in the U.S.,” said John G. Casali, the John Grado Professor of ISE at Virginia Tech and her former Ph.D. faculty adviser.

When asked about Casali’s attribution, Casto answered with modesty saying, “I cannot take total credit...I was the first military person to run this branch. I worked with a great group of people.”

A casual conversation led Casto into the field of speech pathology and audiology. She took an introductory class at the advice of a friend at West Virginia University (WVU), and she found the coursework fascinating. The curriculum matched her intrigue with the field of medicine and interest in helping people. WVU offered an ROTC program, and she made her second career choice in her sophomore year, forgetting about her earlier disregard for the military life. And ironically, she also met her future husband Deron through the ROTC program.

They were both commissioned in 1991, and he went on to serve in Alabama and later Kentucky. She needed her master’s degree, considered necessary for an entry-level job in audiology. So Casto remained a student at WVU where she earned her first graduate degree in 1993. She held a clinical fellowship during 1993-94 at the Center for Audiology in Clarksville, Tennessee, with a welcome interruption by the birth of her first child, Leah, on Independence Day of 1994. When she started her officer basic training coursework in 1995 with the Army Medical Department at Fort Sam Houston in Texas, Deron had left the Army to become a middle school teacher, giving them more flexibility in raising their family and pursuing their careers.

She worked on her first doctorate in audiology from the College of Extended Learning at Central Michigan University while she served as chief of the Audiology and Hearing Conservation at the Blanchfield Army Community Hospital in Fort Campbell, Kentucky and Schofield Barracks/Tripler Army Medical Center in Hawaii. This sheepskin was awarded to her in 2004.

During this intense time of working and studying, she was leading efforts in the Army to prevent hearing loss before it happened, or as Casto described her work — as “getting ahead of the injury. Much of my career has been to provide health education and to mold the environment rather than treating hearing loss after the fact. We do not want to be in the position of repairing after the loss happens.”

While in Hawaii, she learned of the human factors curriculum at Virginia Tech. “John Casali’s program was a perfect fit for me to pursue a Ph.D. within the Army’s guidelines...What he was doing was exactly what we were doing in the Army. We were both not looking at hearing loss as isolated problems, but at what was the larger scope and how we could provide a better system.” Since the Army provided “fantastic opportunities for long-term health, education, and training,” she was able to avail herself of this chance.

The Castos moved to Christiansburg, Virginia for the next three years, with Deron teaching at the middle school, and Kristy still working for the Army but as a Ph.D. student. “Dr. Casali was so accommodating and a huge supporter, telling me we could make it work. We front-loaded a lot of courses,” she added. With mutual admiration, Casali described Casto as “one of my most outstanding Ph.D. students ever.” He was not alone in this opinion. Casto’s dissertation won the Aerospace Human Factors Association’s Stanley Roscoe Award for the national outstanding dissertation in human factors in 2010.

“My dissertation work was actually done at the Army’s Aeromedical Research Laboratory (at Fort Rucker, Alabama) using its Black Hawk helicopter simulator. It was extremely generous of the lab’s leadership to support this enormous collaborative effort. We had significant findings on how hearing loss affected flight performance,” Casto said. Prior to her work, factors such as work load and type of communication device were not considered when determining aviation hearing standards. Only hearing sensitivity was
recorded.

“Our work was able to contribute to the resetting of auditory fitness standards,” Casto added. “It provided a much bigger picture of what was happening.”

After three years at Fort Rucker, Casto and her family moved to northern Virginia. She joined the Office of the Surgeon General in 2012 as an audiology staff officer in the Proponenty Office for Preventive Medicine (now the Public Health division of the Health and Wellness directorate). She continues in that role, but in 2014 was selected to serve an additional role as the audiology and hearing conservation consultant to the Army Surgeon General at the Defense Health Headquarters.

Her work as a staff officer and consultant is focused primarily on policy, strategy, oversight, and advocacy of the Army Hearing Program and the Army audiologists, whereas her earlier career was more focused on implementation of the Army Hearing Program and related research. A recent contribution of Army audiology is the involvement in tactical communication and protective devices (TCAPS). Army audiologists have been involved in the evaluation, selection, and fielding of these advanced hearing protective devices.

“The problem with the more traditional ear plugs made of rubber or foam is that they do a good job of preventing hearing loss but they also sometimes prevent soldiers from hearing what is needed to do their job,” Casto said. “We now have more advanced electronic communication devices that allow troops to hear soft sounds while also maintaining situation awareness.”

“It is an exciting time to be in military medicine,” Casto acknowledged. She now has 20 years of active duty and has experienced most of her junkets in the Army in three year intervals.

Along the way, Casto has jumped out of airplanes as well as rappelled out of helicopters, “scary” opportunities, as she recalled. But she took these chances to put herself in an environment associated with the soldiers we serve. “I needed to understand more about the mental and physical resilience” of a combat service member.

Combined with her research, she has more than a dozen awards and commendations including: Meritorious Service Medals (with 4 oak leaf clusters), the Army Staff Identification Badge, the Air Assault Badge, the Expert Field Medical Badge, the Parachutist Badge, the Army Medical Department 9A Proficiency Designator, and the Elizabeth Guild Award. She is especially proud of the 2014 Joseph Haley Writing Award from the U.S. Army Aviation Medical Association and the Aerospace Medical Association. This latter international award is shared with Casali, and based on her dissertation.

She joined the National Hearing Conservation Association as a member, became its director of education from 2009 until 2012, and is currently the president.
David O. Childress
Civil Engineering
Class of 2006, BS

Seven years ago when David Childress was an undergraduate student at Virginia Tech, he’d typically park his car—a 1999 Nissan Maxima—in a lot on the north end of campus at Stanger Street and Prices Fork Road. Childress would head to class in civil engineering, a glint of a career in commercial construction playing in his mind. Thousands of students have done likewise, before and since.

What a difference seven years makes.

In fall 2011, Childress returned to Virginia Tech as an employee of Providence, R.I.-based Gilbane Building Company and to that same parking lot. The lot is gone, though, now. In its place now stands the Signature Engineering Building, the new $100 million, 155,000-square-foot home for several engineering departments, including mechanical engineering, chemical engineering, and engineering education, along with space for others.

Childress as project manager over the building has seen the Hokie-stone covered building come up from the ground, from foundations to a spring 2014 opening. Move-in is already scheduled for earlier in the year and labs are taking shape with counters, tables, and cabinets.

“What’s awesome about this project is the man who signed my diploma, the new dean who signed my diploma [in 2006], is the end user,” said Childress of Richard C. Benson, the dean of the College of Engineering, who arrived in Blacksburg in late 2005, Childress’ senior year. “He will be using our product. That makes it even more special.”

Before Childress arrived at Virginia Tech several years earlier, he grew up in Columbia, S.C., and had already worked in the construction field since his early teens, hauling lumber and digging holes, working his way up to carpentry, building decks and houses. Legos and Erector sets were part of his childhood.

Childress says he enjoys working in the outdoors, under the sun. “Construction, in general, is a rewarding experience for me,” he added. “You are making something out of nothing, where once was a parking lot, is a monumental building. Even with a deck, you have a plot of land and the next week you have something new. “It’s a rewarding experience to be able to start from the ground and create something, and look at the end of every day and watch your progress and watch it evolve. In commercial construction, it’s just a bigger version of that.”

Orchestrating and planning a massive project, a new landmark on campus with several hundred workers, subcontractors, university personnel and others can be chaotic. But organizing that chaos into a machine with a single goal—open the doors on a new building that will help educate thousands of young engineers for decades to come—is a thrill. “It’s a very rewarding experience to have the opportunity to build a landmark building for your alma mater, and more so for the College of Engineering,” he said.

Childress—who previously has worked on several major projects including hospitals and a lab building for a major pharmaceutical company—heard of the Signature Engineering Building project as far back as when Gilbane was a bidder. He wanted to get involved and come back to Blacksburg. As a high school student touring campuses, he fell instantly in love with the New River Valley area. “I was taken aback by the scenery and the campus and the whole atmosphere,” he said.

(Childress interned at Gilbane while in college. His work there solidified a desire to focus on the hands-on work of construction rather than the design side of his engineering major.)

As the project moved forward, including the presentation to Virginia Tech officials, Childress was asked if he wanted to be part of the team. “I jumped at the opportunity,” he said.

Gilbane landed the project and as shovels were ready to break ground, some staffing changes at the construction company allowed Childress to come on board as lead for the effort that would take the better part of two years and change. “They gave it to me,” he said. Work began in May 2011. He relocated to Blacksburg from northern Virginia that October with his dog, and has been here ever since.

“When I saw the plans for building, I was intrigued,” Childress said of first seeing drawings for the new project. “I knew this was going to be an incredible building. It was really going to become a cornerstone building for this campus. So, I was thrilled to be associated with a project that was more than a routine building. It was truly going to be a signature building and that was apparent from when I first opened the plans.”

Ed Nelson, associate dean and chief of staff for the College of Engineering, has served as head of the Signature Engineering Building project since its inception. “David has done a fabulous job managing the project from his experience as a student here,” he said. “He understands what a Virginia Tech
building needs to look and feel like, he understands the culture. His experience as a Hokie has served him well in this job.”

A special addition to the Signature Engineering Building and Childress’ work to make it a reality has most impressed Nelson. Hanging from the second floor of the new building, suspended 15 feet in the air over the atrium, is a bright red 14,000-pound Rolls Royce Trent 1000 jet engine.

The engine was donated by the company as an art piece and learning tool for the new building, to inspire current students and even young children visiting the building. Moving the engine into the building took hours of patience and great engineering know how. Suspending the engine took great planning and two-days, with input from Childress and Gilbane, Rolls Royce, Boeing, the architect of the building, and many others. (As of press time, the engine remained wrapped in a foam shell to protect it from dust and debris.)

Childress knew of the engine early in the construction phase.

“We had a very hands-on role in figuring out the delivery and planning and hanging of this installation,” Childress said. “We worked with Virginia Tech, and Rolls Royce, and the architect. It was team work all around, everyone involved. It was a real collaborative effort to get that engine here and get it into the air.”

Nelson and Sam Easterling, the department head of the Charles E. Via Department of Civil and Environmental Engineering, both commended Childress on his openness in allowing student tours of the Signature Engineering Building and his guest lecturing in classes that are part of the Myers-Lawson School of Construction, which is shared with the College of Architecture and Urban Studies.

“He has done a great job,” Nelson said. “I think all of the people who have toured the building have been impressed by his knowledge and ability and care of what we are creating here for the building.”

Added Easterling who nominated Childress for the award, “I was impressed by how much he went out of his way to interact with students and faculty, and staff.”

Childress himself enjoys the chance to lecture and meet students that are now in the position he was when he was parking his car and getting to class. “I was sitting in that seat six years ago and now I’m on the other side telling people what it takes to transition from the classroom to the real world,” he said. “I never imagined, never would have thought that would happen.”

Childress’ next project is undecided. He says he would love to stay in the Blacksburg area, but will move on to the next big challenge. His career goals include managing the construction of a bridge – Mike O’Callaghan-Pat Tillman Memorial Bridge at Hoover Dam is his favorite – or a football stadium. Among his hobbies is touring cities and seeing spectacular construction projects. “It’s hard for guys in our trade to look at a building and not think how would we build it, and why things look the way they look.”
Outstanding Young Alumna — Andrea J. Hill
Materials Science and Engineering; BS, 2003

In tenth grade, Andrea Hill’s algebra II trigonometry teacher told her in front of her entire class that she was not “smart enough” to attain her dream — to be an engineer. Instead of being totally embarrassed and crawling into a hole never to be seen again, as many young teenagers might have considered doing, Hill vowed to get the highest grade in the class. When the final exam grades were posted that semester, her eyes scanned the sheet, and her single word response was “Yes!”

As she recalls this experience, her “Yes” sounds as resonant today as it must have been when she was 15. “I did not get the highest grade out of spite,” Hill says. Instead, she says, she just wanted to prove herself.

Well, today, at 27, her high school teacher should take note. Hill has garnered Virginia Tech’s Outstanding Young Engineering Alumna Award for 2005-06. A graduate in 2003, the materials science and engineering (MSE) major’s name has since appeared on some 20 technical papers and five patents in the last 30 months. Two of the patents are with her employer, NanoSonic, Inc., a nanotechnology company spun off from an electrical engineering research center at Virginia Tech. The remaining three are joint ventures between NanoSonic and a major corporate commercial partner, a billion-plus dollar company.

The patents are concerned with a new process for manufacturing in nanotechnology and a novel, groundbreaking material called Metal Rubber™. Although Hill was not the primary inventor, she has been instrumental in the further identification of a family of materials that have optimized MR™’s unique qualities. MR™ is a highly electrically conductive and highly flexible elastomer. It can be mechanically strained to greater than 1000% of its original dimensions while remaining electrically conductive. As a smart material, it returns to its original shape and nominal conductivity. Popular Science, The Economist, Knight Ridder wire service, and several broadcasting companies have featured MR™ and NanoSonic.

Hill, who grew up in Bedford County, Va., and who attended Staunton River High School in Moneta, developed her time management skills at an early age. Living in the country, she had a 25-mile drive to and from school. “I was the first one on the bus and the last one off,” she reminisces, and each ride was 90 minutes long. “I spent many years of my life on that bus,” she laughs. “It gave me a lot of time to think, and sometimes I even did homework.”

Looking at her high school awards, Hill must have done a lot of homework. In 1995, she won first place in engineering in the Bedford County Science Fair from the Thomas Edison Society. She went on to receive third place in engineering in the Regional Science Fair, held in Staunton. Her talents were not limited to engineering, as she also was selected to participate in the All County and All Regional Concert Band as a flutist from 1992 until 1996, and was also drum major of her high school marching band. Hill graduated in 1996 as a member of the National Honor Society.

She entered Virginia Tech in 1996, and realized immediately that she had another hurdle to overcome. All engineering students must bring a personal computer to campus, and Hill had never even surved the Internet, much less owned a computer. “The northern Virginia students were so well-prepared, and I had definitely missed out. But the engineering fundamentals (now engineering education department) faculty and other students helped me get through programming,” Hill says.

Hill, whose maiden name is Byrnside, met her husband Keith Hill, also a Virginia Tech student at the beginning of her sophomore year. They married and she left the University halfway through her junior year to accompany him to Ft. Hood, Texas. Keith, a psychology major who was in the Corps of Cadets, needed to fulfill his term of duty in the Army. “But I always knew I was going to finish my education at Virginia Tech ... and it was actually seamless,” she says. She returned to the MSE department in 2001, and graduated in 2003. Keith also returned to Virginia Tech after a short stint with industry, and reenrolled as a mechanical engineering student. He will graduate in May of 2006.

One of Andrea’s classmates, Andrew Miller, now a graduate student at Stanford, recommended her for a job at NanoSonic after he had done a summer employment with the company. She forwarded her resume which included work as a research assistant with experience in experimentation on materials for use in pressure sensor devices in jet engines, analyzing reactions between bonded elements, and performing research on material properties of high temperature materials. NanoSonic’s President Rick Claus, also a faculty member at Virginia Tech’s Departments of Electrical and Computer Engineering and MSE, hired her immediately.

Hill credits Claus and Jennifer Lalli, also a Virginia Tech graduate and NanoSonic’s primary inventor of Metal Rubber™, as her mentors. Both of them are open minded about trying new things in the lab, she says. “They let me test my capabilities. If anyone early on had told me I would be working in nanotechnology, I would have laughed. But now I can’t imagine doing anything else. I like the versatility of my job...although I do think the word ‘nano’ is over used. There is a lot of emphasis on making things smaller but I think what we are really doing is making materials more interesting,” Hill says.

She does add that when she first tells some of her friends about her work in nanotechnology, “their eyes glaze over.” But she tries to work her way past that reaction until she can excite them about the technology’s possibilities.

After a little more than a year with the entrepreneurial company, Hill was named the sensors group leader. Her responsibilities now include the management of several Small Business Innovation Research (SBIR) awards, Independent Research and Development (IRAD) and non-SBIR government programs. She is also a principal investigator on a DARPA Phase II enhancement grant, an Air Force Phase I SBIR, a NASA Phase I SBIR, and a Naval Research Laboratory major development program. Hill is also the administrator of the Metal Rubber™ fabrication, development and sales. She believes the new material will be used “in high technology applications, both in defense and in commercial ventures. And, based on some of the modifications, the family of associated materials should have a widespread commercial market, including sensors and flexible electric components.

In Andrea’s limited spare time, she continues to play the flute, and she has also become a jeweler. She and Keith are building a new home nearby, as she hopes to grow with the company.
Air Force Capt Kelley Jessee credits her successful career in the U.S. Air Force to a scheduling hiccup during her junior year of high school.

With choir and Spanish class being offered at the same time, Ms. Kelley had to choose another class to fill a credit shortage in her schedule. The cheerleader, who had her heart set on being a veterinarian, opted for a new class being offered at her rural high school: Junior Reserve Officer Training Corps.

“I talked to the major in charge and he told me about the program,” Capt. Jessee says. “He said my grades were good, and I could apply for a college scholarship in engineering through Air Force ROTC.” Excited by the scholarship possibility and the program’s mission, she fully immersed herself into ROTC. She graduated from high school in 1998. Her choice of college was easy. Her parents, Robert “Tom” Jessee and Barbara Awbrey, attended Virginia Tech in the mid-1970s. Several other aunts and uncles are alumni as well. “I was born and raised a Hokie,” she says. “I remember my mom taught me the fight song for Virginia Tech when I was only four. I’ve been a Hokie my whole life.” It was the only college she applied to.

Ms. Jessee originally chose civil engineering as a major, but soon after switched to aerospace. She found roads and bridges “boring,” but rockets and airplanes “cool.”

“I actually was worried the Air Force would not let me change concentrations,” she says. “They were thrilled.” When it came time for her to graduate in 2002, Major Dale Van De Ven, the Junior ROTC instructor from Richlands High School, came to Virginia Tech to commission her into the Air Force. “Even as a junior in high school, she was smart enough to know if you’re going to succeed on the road of life, you’ll have to do a lot of pre-planning and hard work,” Major Van De Ven says. “She sticks out in my mind as someone who says I’m going to get it done, and I’m going to get it done right and I’m going to get it done now.’ She is a self-starter, and that is rare in high school students.”

From her rural hometown and then Blacksburg, Capt. Jessee was assigned to Los Angeles Air Force Base. There, she found herself in one of the nation’s largest metros, with no snow in winter and no turning...
leaves in fall. She adjusted and soon learned to surf and play guitar. “It’s a great place to live in your early 20s,” she says. The adjustment to Air Force life gave one surprise, “The Air Force was a little more relaxed” compared to cadet life at Tech.

Capt. Jessee was first assigned to the Transformational Satellite Communications System (TSAT) Program, MILSATCOM Systems Wing, Space and Missile Systems Center. She was promoted multiple times in four years, starting as a program office engineer in the Systems Engineering Segment, then serving as the executive officer to the program director, then chief of the Spacecraft Systems Branch and lastly Lasercom test manager.

As program office engineer, Capt. Jessee led a 100-person team supporting vital systems engineering and integration efforts. She also served as a liaison to the $7 billion TSAT Space Segment and $2 billion TSAT Mission Operating Systems Segment. As the program director’s executive officer, Capt. Jessee managed the center’s administrative functions and supervised 10 government and contractor workers. As the Space Systems branch chief, she led more than 20 personnel on a $779 million space vehicle development project and all subsystems design efforts for the $18 billion TSAT program. As Lasercom test manager, she led a 130-person team in the $1.9 billion Lasercom risk reduction test in cooperation with the National Reconnaissance Office and the Massachusetts Institute of Technology’s Lincoln Labs.

In October 2006, with a move to California’s Edwards AFB, Capt. Jessee was assigned to the 31st Test and Evaluation Squadron as lead engineer of F-22 Weapons Integration Testing. One year later she was promoted to flight commander of F-22 and F-35 operational testing. In 2007, Capt. Jessee worked on the integration of the new Small Diameter Bomb, a low-collateral damage weapon being integrated into the F-22 weapons arsenal. She now provides early operational test preparation and planning for the F-35 flight test program, in addition to her F-22 early operational testing engineering support.

Capt. Jessee holds a Level 2 certification in Systems Planning Research Development and Engineering and a Level 1 certification in Program Management and Test and Evaluation from Defense Acquisition University. She was promoted to the rank of captain in 2007 and continues her education. She is taking an online master’s course in engineering management through the University of Wisconsin - Platteville.

She plans to leave the military this summer and enter the private sector as a project manager in the San Diego metro. “She’ll succeed wherever she goes,” Major Van De Ven says. “She works too hard and is too conscientious not too succeed. I’d hire her in a heartbeat.”

Capt. Jessee has won several Air Force honors, including the 31st Test and Evaluation Squadron Company Grade Officer of the Quarter, twice in 2007, Edwards Air Force Base Tennant Unit Company Grade Officer of the Quarter, Space and Missile System Center Outstanding Scientist Team Award in 2005 and the TSAT System Junior Company Grade Officer of the Year in 2005.

“Part of me is surprised and another part of me isn’t,” says Barbara Awbrey, Capt. Jessee’s mother and assistant director of disability services at Virginia Tech, about her daughter’s 2009 Outstanding Young Alumna award. “She is so ambitious. She excels in everything she does.” Ms. Awbrey adds that her daughter demonstrates not only intelligence and mastering of engineering skills, but vibrant human warmth and a sense of humor. “She represents a well-rounded person, which is good for the military, good for Virginia Tech, and good for engineering.”

Major Van De Ven agrees. “Kelley established a legacy that exists to this day at the rural high school. Setting the bar for future students who face the local jobs choices of coal mining, working at a prison or for the county school system.”

Despite her many professional accomplishments, Capt. Jessee says she is most proud of advising younger Air Force officers on career goals and other matters. She credits her mentorship to the “leadership skills I learned in the Virginia Tech Corp of Cadets. If it had not been for that amazing program and what it offers, I don’t feel I would have been as prepared for my life and career. I learned so much, it’s invaluable. I can’t put a price on that education.”

Nor can she put a price on that scheduling snafu which led her to the door of Van de Ven. “I think about that every day,” she says. “It was God’s divine intervention in my life. God knew that I needed to have this experience and that I needed this education. I didn’t know. If that hadn’t happened to me, I don’t think I would have studied engineering and I would have always questioned my intelligence.”
Outstanding Young Graduate Alumnus

Dr. Sastry Kompella
Computer Engineering, Class of 2006, Ph.D.

Sastry Kompella was interested in communication networks, the intricate flow and transfer of radio signals, and electronics even before he entered high school in his native India. He was first hooked by courses on communications and electromagnetics in middle school, and his curiosity never waned. “It was just something I got really interested in,” Kompella says.

Yet, whereas many American children aspiring to be engineers can play with Legos, or pull apart and reassemble cameras and radios, Sastry did not have that opportunity.

“The first awe inspiring thing that I saw was during my vacation after my 10th grade, when my dad was stationed in Bangalore, India, working on a project for the Indian Space Research Organization,” said Kompella. “He was in charge of building something called the Large Space Simulation Chamber that replicated conditions in space for testing satellites. The electronics and control systems aspects of this project impressed me most, and made me want to go into this field.”

Now, years later, Kompella’s childhood fascinations have carried over to three degrees – the first earned in his native country and the remaining two in his new home of the United States – and what is sure to be a long career in wireless network systems with the U.S. Naval Research Laboratory, or NRL for short.

Already, he has garnered awards and recognition for his work in developing new theoretical wireless networks and cognitive radios, with a focus on tactical networks for war-time environments, underwater acoustic communication, and dynamic spectrum access. All of his work is performed with an eye toward energy efficiency.

Kompella has rocketed to a leadership position, going from a contractor research engineer employed at ITT Industries, to a senior research scientist of information technology working directly for the Naval Research Laboratory, to head of the department’s Wireless Networks Research Section.

“It is phenomenal that Sastry has risen to the position of section head for Wireless Networks Research in just five years,” said Scott Midkiff, professor and former head of the Virginia Tech Bradley Department of Electrical and Computer Engineering, and now serving as the university’s vice president for information technology. “This is an organization that is rather ‘static,’ making promotion opportunities rare. The typical section head is a long serving, senior employee.”

Several of Kompella’s ongoing research projects
are tied to Virginia Tech, his doctoral alma mater. The Hokie Nation was long in his plan, even before he came to the university in 2003.

In 1996, after completing his bachelor's degree – with honors and a Gold Medal award – from Andhra University in Visakhapatnam, India, Kompella wanted to come to the United States and obtain a master's in electrical engineering from Virginia Tech. He already knew of the university from a high school chum who earned his own master's from the College of Engineering, as well as Virginia Tech's strong reputation for wireless technologies, stemming from work funded by U.S. Department of Defense.

Logistics did not work out, and Kompella earned his master's degree from Texas Tech University instead. After graduating in 1998, he secured employment at networking services company Symtx Inc. in Austin, Texas, as a project engineer and then a project engineering leader. In 2003, he saw an open call email sent from Virginia Tech looking for doctoral students in the field of wireless networks and network optimization.

“I was a perfect fit for it, so that's how I got to Virginia Tech,” Kompella said.

Kompella studied under Tom Hou, professor of electrical and computer engineering, as part of the National Science Foundation's Integrative Graduate Education and Research Traineeship program. “I really liked Virginia Tech,” said Kompella. “The work that was being done there, and the location. It was not in the middle of a city. It was more inimitable for research.”

The lack of distractions meant more time for work and study.

Kompella was impressed by Virginia Tech, and it, in turn, was awed by him.

“He made an instant impression when he first visited me on campus before joining our Ph.D. program. I found him mature, full of purpose, and destined to accomplish great things in his academic career,” Hou said. “His academic experience and accomplishment at Virginia Tech was amazing. He took only three years to complete his Ph.D. His dissertation was packed with significant results that one can hardly imagine that they were completed in a three-year time.”

At the Naval Research Laboratory, much of Kompella's work is theoretical, with eventual real-world practice as a long-term goal. He has developed new approaches for pushing performance limits of complex wireless network systems not approached before, Midkiff said in his nomination form of Kompella. “Such efforts are not only of theoretical importance, but also offer performance benchmarks for design and evaluation of distributed algorithms and protocols,” Midkiff said.

Of his research, Kompella remains most excited about cognitive radios, super-smart radios that are aware of their own environment, capabilities, and operating rules, and can adapt to changing scenarios. Think of them as akin to autonomous robots or drones, can maneuver on their own, avoiding obstacles. Virginia Tech's Jeffrey Reed, director of Wireless at Virginia Tech, and himself a creator of the field, has worked with Kompella on new breakthroughs in this growing, high-dollar field.

“He has a great balance of communication skills, interpersonal skills, and technical knowhow,” Reed said of working with Kompella, during the latter's student days and now.

Kompella also is breaking ground in the field of layerless networking, high-tech network and sensor design, and radio control for the battlefield.

Related, he also is leading the way in underwater networking communications, not for submarines, but for new military tools such as the autonomous robotic jellyfish now under development by the U.S. Department of Defense and Virginia Tech's own Shashank Priya of mechanical engineering.

For the faux jellyfish, the robots – ranging in size from a man’s outstretched hand to 5-foot long in diameter – would be used as surveillance against potential enemy targets, as well as for peacetime tools, such as the study of the environment. The data collected by these 'bots – meant to run on their own accord for months – would need to send data back to their operators, be they military or scientists.

The trick: building and installing a communications node that is small enough not to interfere either by size or weight, and also be energy efficient, as to not bog down the robot. And it’s not just high-tech, in-development robots that could use these nodes, but ocean mainstays such as buoys as well, possibly measuring rising or falling ocean depth or pollutants in the water.

The field of wireless communications is wide open and, for now, seemingly endless. "Wireless networking is still a major research area and I see myself working in this field for a long time, just because there are a significant number of problems that are yet to be solved," said Kompella. "We believe that cognitive radios are an enabler for solving some of those solutions both in the commercial world as well as the Department of Defense, and so, currently, we are spending a good amount of time in this area."

Hou, who Kompella remains in regular contact with, speaks highly of his former doctoral student's work ethic and dedication: "He showed all the ingredients of a leader: vision, integrity, dedication, team work, inspiration, communication skills, and, a sense of humor.

"I am not surprised at all about his accomplishments after graduating from Virginia Tech. His job at NRL shows his commitment to serve his country. His success best exemplifies the university’s motto, Ut Prosim, That I May Serve."
Dr. Celine Mahieux
Class of 1996, MSc,
Materials Science and Engineering
Class of 1999, Ph.D.,
Materials Engineering Science

When Celine Mahieux was 14 she had the opportunity to go inside the Ganil accelerator (CNRS/CEA) and listen to the scientists describe their work in exciting detail. For an impressionable teenager growing up in a suburb of Paris, France, this unusual experience opened her eyes and mind to a career in technology, not particularly commonplace for European women.

But her father was an engineer, and both of her parents were supportive of her career choice. “I knew that if I got my engineering degree in France, I would be able to do anything,” the young mother of two says today. She earned her diploma in mechanical engineering (ME) from the Universite de Technologie de Compiegne, France. In this university, the percentage of female students in engineering is close to 50 percent, an exception for an engineering school. The caveat was that most females studied biological engineering so she recalls that she still “stood out more” in ME. “But I found it to be an advantage since people remember you when you stand out,” she smiles.

With her excellent grades, she immediately crossed the Atlantic Ocean to enter graduate school at Virginia Tech where she started working as a teaching assistant with Professor Norm Dowling, and later with National Academy of Engineering member Ken Reifsnider. She concentrated on materials science as she found the interdisciplinary nature of the program “very interesting. It expands from the very theoretical all the way to practical design,” she says. While working with Reifsnider in the Materials Response Group, she received a Paul E. Torgersen Graduate Research Award for her master’s thesis.

“Dr. Reifsnider is a very, very bright scientist. His mind works in a beautiful way, and he is able to breach science and engineering…. I also found his skills as a manager really amazing. He provided vision, empowered his students, and was able to get the best out of people without creating a competition between them. As a master’s student he made me feel like one of his peers and encouraged me to take the initiative.”

These words are some that she has played back in her head many times since her master’s in materials science and engineering was awarded in 1996 and her doctorate in materials engineering science in 1999. Today, as the director of change management and carbon capture plant program manager for Alstom, a worldwide company specializing in power
generation and rail transportation, she faces the significant challenge of setting up innovative, state-of-the-art programs to build power plants that will capture the carbon dioxide gas that is emitted into the atmosphere and is thought to contribute to global warming. As she considers scenarios and the importance of this task, she often finds herself thinking, “How would Professor Reifsnider react?”

Mahieux has had eight years to fine tune her management skills. She joined Alstom in 2000 after first working for ABB Corporation in its composites group. At ABB Corporate Research she was the leader of structural composite activities, mainly in the design of flexible risers for off-shore oil production and other industrial products. After two years she switched to Alstom where she started working in the hydrogenerator technology center, where she was leading the development activities related to non-metallic materials.

After four years, she was placed in her current position with Alstom’s power systems sector, a 20,000 employee group. She is in charge of forming the corporate response to new developments in technology and market shifts, to multi-business projects sponsored by the sector.

She is particularly excited about her charge to develop pilot projects to capture the carbon dioxide emissions. “We are challenged from every direction on this project – technology, economics, legislation. And we are looking at all of these considerations but our main focus is the technology. We hope to have these power plants available commercially by 2014 for demonstrators and 2020 for worldwide commercial release,” Mahieux says.

Mahieux’ credentials lead one to believe she will make the target date. She was one of four individuals or teams nominated for the 2005 French Engineer of the Year award in the industry category. The nomination was based on her successful development of a composite-based thrust bearing that has since been successfully used within a power generation turbine. Mahieux was named a runner-up for the French Engineer of the Year award, sponsored by the French Minister of Finances and Industry, and co-administered by France’s National Council for Engineers and Scientists.

In 2004, Mahieux earned a six-sigma master belt certification, allowing her to train and certify other students in a business process improvement methodology designed to optimize customer requirements and expectations. Alstom considers her an expert in international business management, composite materials, ME, product and business optimization methodologies, and quality control. She speaks English, French, and German fluently.

She holds four patents and is the author of “Environmental Degradation in Industrial Composites,” a technical reference book released by Elsevier Scientific in January of 2006. She also received the 2004 JEC Composites international innovation research award for her work.

It’s no wonder Virginia Tech’s College of Engineering has presented its Outstanding Alumna Award for 2008 to Mahieux.

Mahieux met her fellow Hokie husband, Jon Medding, while they were both at Virginia Tech. He received his undergraduate and graduate degrees in ME in 1994 and in 1996, respectively. He currently works for ABB, and they live in Switzerland with their daughter Sarah, 5, and son, Raphael, 1.

“I try to keep a good work/life balance,” says Mahieux. “I hope to be able to play a small role in the environmental field and I spend as much time as possible with my children. I see the carbon dioxide challenge ahead as important to solve for my children’s sake.”

And someday, she hopes to return to academics, possibly in the U.S.
The teacher or professor as a mentor who opens one’s eyes to a new career path or a new way of thinking is a touchstone moment in many people’s lives.

Laurie McNeill, who graduated in 2000 from Virginia Tech’s Charles E. Via Department of Civil and Environmental Engineering with a doctoral degree and is now an associate professor at Utah State University, has had two.

The first mentor came in high school in California, where Dr. McNeill was during her mid-teens after a life as an Air Force brat that moved her from all over the American Midwest to Japan and California. “I had a great chemistry high school teacher, and I really took a shine to chemistry,” she says. “He said, ‘Why not consider chemical engineering?’” And so she did.

Dr. McNeill chose University of Colorado at Boulder because of the presence of nearby family friends. For a few years, she thought her career track was laid out with those of classmates. “Everyone in chemical engineering was going to work for the oil industry, and that’s where I assumed I would end up.” Then during her junior year, circa 1993, she met Marc Edwards. Now the Charles Lunsford Professor of Civil Engineering at Virginia Tech, Dr. Edwards at the time was on faculty at CU Boulder and starting to make a name for himself as an expert in water infrastructure.

“I took Marc’s ‘Intro to Environmental Engineering’ class as an elective,” she recalls. “It was my first exposure to environmental engineering, and it really opened my eyes to lots of issues, including water quality and water infrastructure. I can honestly say taking that class put me on my current trajectory. I finished my degree in chemical engineering, and I’m very glad that I did. But I switched to environmental engineering for graduate school.”

Dr. McNeill said she decided on graduate school at Edwards’ suggestion during that junior year session. “At the end of the semester, he asked if anyone was interested in working on research, and I jumped at the opportunity,” she adds. “He was studying a lot of things, principally pipe corrosion and arsenic removal from drinking water. The arsenic project was the one I started on first.” She was hooked.

“I never even thought of graduate school until I started working in his lab, and he mentored all of his undergraduates, and encouraged them to go to graduate school,” she says.

She earned her master’s degree in civil engineering from CU Boulder in 1996. When Dr. Edwards left Boulder and the Rockies for Blacksburg and the Appalachians, Dr. McNeill – the former child of an Air Force family, who was quite accustomed to relocating – fol-
for instance, was a must. Apparent everywhere. Carrying identification papers, and the tense political/religious climate was readily water distribution system remained a constant issue, potentially cancer causing. A lack of a viable, robust ing a new wastewater treatment process, and studying and reusing wastewater for irrigation, implement- and solid waste treatment. Research focused on treat- ing and reusing wastewater for irrigation, implement- in classes in environmental engineering, and wastewater and solid waste treatment. Research focused on treat- of the material (remaining after burn off),” she says. Dr. McNeill’s work in Palestine as a visiting pro- as an assistant professor of environmental engineering at Utah State University. By 2006, she gained tenure and was named associate professor. The tenure position allowed her to travel, working for a sabbatical in Palestine and volunteering time and effort as the fac-ulty adviser for the university’s Engineers Without Bor-ders club. The latter has allowed her to travel to Peru, and advise students working on projects in Mexico and Uganda. Locally in Utah, she is heavily involved in research to determine the desert environmental effects of solid rocket motor testing by aerospace and defense company ATK. Soil, vegetation, air and water all are being tested for possible effects from material left over from the stationary blast tests. “We are looking at the effects of the material (remaining after burn off),” she says. Dr. McNeill’s work in Palestine as a visiting pro- fessor at An-Najah National University for just less than 12 months in 2007-2008 made a strong impact. Inspired by a fellow Utah State faculty member who worked extensively in the strife-torn area, she taught classes in environmental engineering, and wastewater and solid waste treatment. Research focused on treating and reusing wastewater for irrigation, implement- ing a new wastewater treatment process, and studying the presence of chemicals in drinking water that were potentially cancer causing. A lack of a viable, robust water distribution system remained a constant issue, and the tense political/religious climate was readily apparent everywhere. Carrying identification papers, for instance, was a must. “Anytime you live in a new culture there are new challenges, just meeting new people and experiencing a different culture, and the culture had lots of differ-ences from American culture, not necessarily bad, just different,” Dr. McNeill says. “Here in America we get in our car to drive for days if you want to, but in the West Bank you have checkpoints and soldiers with guns everywhere. So that was a shock to live under restric- tions.” Nevertheless, she continues research work with An-Najah faculty and graduate students. Dr. McNeill’s international efforts did not begin or stop there. With Engineers Without Borders, she led an effort to improve a water system for a Peruvian village of 300 people in the rural mountains. The two-year project took two trips, one in 2006 for assessment and the second in 2007 for actual construction. About 12 students and three Utah State faculty members accompanied her. It was a group of students within the club that inspired her initial interest in Engineers Without Borders. “They came to me and asked what is the best hand pump for this new well in Peru, and I thought, I have no idea,” Dr. McNeill recalls. “I have a Ph.D. in environmental engineering. I teach drinking water treatment classes. But I have no knowledge about past technology, i.e., a hand pump in a developing community. So that really interested me. It was a different way to apply my engineering knowledge and once I got tenure, I got involved in the club.” Her strong involvement has resulted in thrilled, encouraged students and accolades from her peers. In fall 2010, she was named the Carnegie Foundation for the Advancement of Teaching – Utah Professor of the Year; in 2007, she was named the Utah State University Eldon J. Gardner Teacher of the Year; in both cases, it was the first time a professor from engineering won the honor. In 2006, Dr. McNeill was named Utah State University College of Engineering Outstanding Teacher. Of the 2007 university award, she says, “What I really appreciated about that is even the die-hard structural engineering students felt they were getting a benefit from my class. The field of environmental engineering is important for all engineers, not just the environmental-track students, so I’m glad I was able to share that with a broad range of students.”
In 2010 Popular Science named Maurizio Porfiri one of its Brilliant 10, calling him the “Water Wizard.” The magazine’s annual listing focuses on the ten most impressive young scientists in the U.S., selected in a six month process that engages a wide cast of professionals in seeking out the most creative and important research in the country and the individuals who are shattering these new frontiers.

According to the magazine, achievers make Popular Science’s “brilliant” listing because they “have the gall to ask the big questions.” They “challenge what we thought it possible to know” and their answers “are opening up ever more perplexing questions.”

For Dr. Porfiri, Popular Science found his idea for biologically inspired robots serving as influential forces on animal behavior intriguing. So did CNN and NPR, among numerous other popular media. Their interests followed two years after Dr. Porfiri received a National Science Foundation CAREER Award to “close the loop between engineering and nature” and focus on control strategies for multi-vehicle teams and mobile sensor networks that stem from the mathematical understanding of the collective behavior of animal groups, such as schools of fish.

Dr. Porfiri, a native of Rome, Italy, is a two-time graduate of Virginia Tech’s College of Engineering. He received one of his two master’s degrees in engineering mechanics (EM) at the Blacksburg, Va., university in 2000. He returned to earn a doctorate in EM from Virginia Tech in 2006. He also holds a combined undergraduate and master’s degree in electrical engineering from the University of Rome, and doctorates in theoretical and applied mechanics from the dual-degree program at the University of Rome and at the University of Toulon, both with the Class of 2005.

With all of his education, Dr. Porfiri credits Virginia Tech with his interest in engineering. The former head of the Virginia Tech Engineering Science and Mechanics (ESM) Department, Ed Henneke, had recruited Dr. Porfiri through a collaboration Henneke started with the University of Rome. “As I learned more about the science of engineering in the ESM department, it made a big impact on me,” he says.

When he returned to Blacksburg and was in the unusual position of obtaining yet another doctoral degree, Dr. Porfiri was able to simultaneously work as a post-doctoral researcher with Virginia Tech’s Autonomous Systems and Controls Laboratory in the Bradley Department of Electrical and Computer Engineering. This lab specializes in marine robotics, and develops autonomous systems.

To say Dr. Porfiri was busy is an understatement. His Ph.D. advisor was Romesh Batra, a State Council of Higher Education award-winning professor who was also named the 2011 Outstanding Scientist for Virginia. His post-doctoral work was with Dan Stilwell, an associ-
ate professor of electrical and computer engineering, and also an NSF CAREER Award recipient and an Office of Naval Research Young Investigator.

As Dr. Porfiri recalls, the time was “intense.” But he had set his goal of becoming a professor, and felt that a career in the U.S. would be “very exciting” and have a creative aspect. In the U.S., one gets “a lot of freedom and is more independent” than in Italy with its more hierarchical system, he explains. He charted a slightly different course from his two Virginia Tech mentors, who concentrated in the fundamentals of mechanics and in the knowledge of dynamic systems. Dr. Porfiri added his self-acquired proficiency in the locomotion of animals, and most specifically, fish, as he found his own unique niche in the research world.

He landed his first tenure track position in 2006 at the Polytechnic Institute of New York University’s Department of Mechanical Engineering and Aerospace Engineering. Within five years, he was promoted to associate professor with tenure.

Dr. Porfiri was thrilled to move to the Big Apple with his wife, Maria, an art historian who he met in Italy when he was 17 and she was 16. They married years later in Blacksburg, and when they moved to Brooklyn, she became a volunteer at the Metropolitan Museum of Art, and manages property that the University of Rome has in Manhattan.

With his first academic appointment, Dr. Porfiri created his own version of Stilwell’s Autonomous Systems and Controls Laboratory, founding the Dynamical Systems Laboratory where he conducts research in modeling and control of complex dynamical systems with a developed expertise on underwater applications, spanning from underwater robotics to mechanics of advanced materials. He advises a team of 20 post-doctoral fellows, graduate, and undergraduate students.

Here, in a clever undertaking, Dr. Porfiri took his 2008 NSF CAREER Award, an honor presented to young scientists and engineers who NSF believes have the capabilities to become the academic leaders of the 21st Century, and studied the problem of designing robots that could engage fish shoals and regulate their collective behavior. For example, he used his knowledge of materials to create a smart tail that expanded and contracted, similar to the muscles found in fish. The fish he placed in a tank with his robots interacted with the machine, consistently showing remarkable preference for them.

Dr. Porfiri says, as he places biomimetic robotic fish within live fish environments, he is “aspiring to close the loop between engineering and nature.” By creating behavioral models and mathematical methods for analysis and control of complex networks, he will advance the understanding and help control the dynamics of the fish shoals. By improving the current understanding of complex multi-agent dynamical systems, the research has potential impact for multi-vehicle robotics, animal behavior science, aquacultural engineering, and fish protection methods.

Why would fish need to be protected? Consider the BP oil spill in the Gulf of Mexico. Possibly, this robotic device could have been used to lead the real fish away from the dangerously polluted waters. Or theoretically, robotic fish could patrol areas where power turbines operate in the water, and again, help navigate the real fish away from the danger.

Gary Tuchman of CNN fame and Ira Flatow, who produces the NPR public radio program Science Friday, both found Dr. Porfiri’s work fascinating and were among the numerous reporters who aired reports on the research of this lifelong animal lover.

Recently, the associate professor of mechanical and aerospace engineering received an invitation from the National Academy of Engineering to join its 2011 symposium, Frontiers of Engineering. This two-day summit focused on cutting-edge developments in additive manufacturing, engineering sustainable buildings, semantic processing, and neuroprosthetics. The Frontiers program cited Dr. Porfiri for his explorations of how the patterns of natural systems such as schooling fish, flocking birds, and human crowd flow can inspire algorithms for coordinating robotic systems. He earned particular acclaim for his now famous work on underwater robotics, including the biomimetic robotic fish that are shedding light on leadership patterns in nature and which could impact fields ranging from animal behavior science and aquacultural engineering to environmental and marine life conservation.

Dr. Porfiri’s interests also include design and modeling of smart materials and structures for sensing, actuation and energy harvesting in aqueous environments and advanced materials for marine vessels. He has expanded his teaching credentials to elementary, middle, and high school students, including those from under-represented groups, and designing an innovative experience for them at the New York Aquarium.

In September he received another NSF grant of $560,000, this time to explore how a cyber-enabled citizenry can become actively engaged in the monitoring of water in the highly polluted Gowanus Canal in Brooklyn. His goal is to engage the local community to monitor this highly polluted body of water that, as legend has it, once served as a dumping ground for the Mafia. Dr. Porfiri plans for the volunteers to use an array of mobile-instrumented buoys for the water monitoring, and ultimately create a model for ways communities can participate in real-time execution of a technological task.

Another of his current ongoing projects, supported by the Office of Naval Research, is aimed at furthering the understanding of how advanced marine structures such as unmanned underwater vehicles behave when faced with extreme conditions including blasts and other types of impacts. An obvious difference between the underwater vehicle made with advanced composites and a space vehicle is the fact that fluid surrounds the entire structure, affecting its ability to absorb shock and how it might vibrate upon various types of impacts.
The challenge for Pyla and his team in this competition was in designing an easy-to-use app for a three by four inch screen that “condensed the depth and breadth of the Bloomberg Professional Service, the world’s most comprehensive financial data service, for subscribers on the go,” Hartson, Pyla’s Ph.D. adviser, explained. “This involved distilling complex information sets of financial market analyses into consumable insights on a small screen while accounting for potential interruptions in connectivity.”

Earlier in his career at Bloomberg, Pyla was tasked along with his colleague Arshad with another rather difficult, but career-defining problem. They were to design an application to help portfolio managers understand the performance of their financial holdings. The trick was that the solution involved multiple statistical variables with long lists of related and unrelated metrics, absolute and variable benchmarks, and the use of unpredictable portions of their portfolios as the unit of measurement.

Arshad credits Pyla with creating an intuitive and simple approach to this complex problem that “allowed users to tackle each dimension intuitively and simply.” In addition, Pyla’s design for this product “was instrumental in proving to the Bloomberg management and rank-and-file the tremendous value of a human-computer-interaction-based user experience … This led to the expansion of the user experience team, and the creation of a multi-million dollar usability lab that Dr. Pyla was also instrumental in designing.”

After Arshad, Pyla was the second person hired at Bloomberg as a person with a skill set for designing technology that engenders a great user experience. “We needed to prove what a design team could do,” Pyla added, and as a result, the team has grown to 27.

At Bloomberg, Pyla, who held an adjunct faculty position with Virginia Tech’s CS Department before he relocated to the company’s Big Apple office, is nicknamed “The Professor.” His team credits him with mentoring younger designers in both the craft of design and in communicating their ideas to audiences of engineers and product managers. “What endears him to the team is (his) tremendous sense of humility and spirit of partnership. He has a very disarming style,” said Arshad.

Pyla brought that same style to Virginia Tech when he arrived in 2001. When he accepted Virginia Tech’s offer of admission, it was sight unseen from his homeland of India. He had applied to numerous universities in the United States, and he received offers from all of them. Not knowing what choice to make, he sought advice from friends who were in the United States, and almost all of them told him Virginia Tech was the place to be for his masters in computer engineering. When he needed a course outside of his major for breadth requirements, he picked Usability Engineering in the CS department, a topic
that had always captured his interest, but he never knew existed as a curriculum choice.

“I used to obsess about making things intuitive and easy to use long before I knew there was a field of study called human-computer interaction,” Pyla said. “I used to focus on issues like error-avoidance and turn-taking between the user and the system even in my early days of programming for command-line DOS applications.”

From this course, he learned about the Center for Human-Computer Interaction, and met Hartson for the first time. “Rex was a pioneering researcher in human computer interaction,” Pyla said. “I immediately connected with him…and I was pleasantly surprised when he said I could work with him.”

The center’s mission is to study the interaction between humans and computing systems, and even everyday devices, with the objective of designing systems that enhance human life. As a graduate student Pyla’s team in a design course developed an award-winning proof-of-concept design paradigm to make interacting with everyday computing devices natural and intuitive. This work won first place in the 22nd Annual Research Symposium and Exposition of the Virginia Tech Graduate School in 2006, marking the first time this honor was won by a CS student team.

At Virginia Tech, he also sought out first-hand experience in teaching and in mentoring. He coordinated the National Science Foundation funded Research Experience for Undergraduates Program for the department in 2006-07. As part of this opportunity, Pyla helped recruit and mentor 24 undergraduate students from more than a dozen universities in various aspects of human-computer interaction research and practice.

Just before he received his doctorate, Pyla was an invited panelist at the Workshop on Undergraduate Research in Computing: Building Diversity in the Computer Science Research Pipeline, part of the Richard Tapia: Celebration of Diversity in Computing Conference in 2007. He presented his experiences in, and recommendations for, engaging and encouraging women and minorities to pursue computer science.

He also coordinated the Scholars of the Future Program in CS, assisting in the recruitment and mentoring of 12 undergraduates. “His influence on these young people was significant and many of them have gone on to conduct impressive work in the field,” Hartson said.

While at Virginia Tech, Pyla received the Outstanding Teaching Award from his department in 2008, the Outstanding Doctoral Student award from the College of Engineering in 2007, and the Citizen Scholar Award for scholarship in service to the community from the Graduate School in 2007. He was the invited graduate commencement speaker at the Graduate Commencement Ceremony, also in 2007.

Pyla has retained his ties to Blacksburg and to Hartson, co-authoring in 2012 the book, The UX Book: Process and Guidelines for Ensuring a Quality User Experience. This comprehensive textbook and practitioner’s field guide to the complete interaction design discipline won the Most Promising New Textbook Excellence Award of 2013 from the Text and Academic Authors Association (TAA). To date, the book has been adopted as a text for human-computer interaction and user experience at top colleges and universities, and it is already in its second printing. This success is a stepping-stone to their next collaboration, currently underway.

What does the future hold for this already very successful computer science graduate who has been out of school for less than ten years? “I am having fun, and am intellectually satisfied. I enjoy working with smart people and mentoring new young talent,” Pyla reflected. “I’ll keep doing it” as long as this holds true, he added.
Some children want to pitch major league baseball and drive a delivery truck on the side when they grow up, before they wise up and find a new goal. Henry Sodano, now an assistant professor in the mechanical and aerospace engineering department at Arizona State University (ASU), wanted to be an engineer. And now he is. “I knew I wanted to be an engineer since I was a little kid,” Dr. Sodano says. “Just looking at a picture, I could build whatever I saw.”

Young Dr. Sodano could build seen objects out of Legos, Construx and other toys. The niche for building and using his hands carried over to introductory engineering classes at his northern Virginia high school. Among the classes he took was computer-aided-design (CAD) crafting. One of the classes was taught by Mr. Patton, an instructor from Northern Virginia Community College, who gave the high school students in his class the qualifying entry exam to enter the school. Dr. Sodano took the test, but he had his eyes set on higher prospects.

“I wanted to do my degrees at the top engineering (school) in Virginia, and that’s how I ended up going to Virginia Tech,” Dr. Sodano says. And how. Dr. Sodano earned three degrees from the College of Engineering: bachelor’s, master’s and doctoral, all in mechanical engineering.

Along the way, Dr. Sodano picked up a mentor in Dan Inman, holder of the G.R. Goodson Professor chair and director of the Center for Intelligent Material Systems & Structures. “I met him in an undergraduate vibrations class, and I really enjoyed him as a teacher and started to organize my graduate degrees with him as my adviser,” Dr. Sodano says. “Then I completed my master’s in a year, and so I decided to stay on and earn a Ph.D.”

The impression was mutual. “Henry was a great student,” says Dr. Inman. “He impressed me to the point that I hired him to work in our lab as an undergraduate researcher the summer between his junior and senior year. He did so well, I hired him while he was a graduate student. He worked, and still does, extremely hard. He also has a great vision for new problems and completely defined his own Ph.D. topic. The amazing thing about Henry is that he worked on all kinds of other research topics besides his master’s
and doctoral degree topics, and published on many other topics. He is a very creative guy with a very down to earth approach to solving technical problems."

Dr. Sodano worked with Dr. Inman when the latter ventured into energy harvesting. This research involves culling energy from environmental sources such as light, temperature gradients, wind, and vibrations, which are some of the areas being explored for future energy generation. For instance: While jogging, a runner can power his or her MP3 player through an energy-emitting sensor strapped to a leg or to a backpack that produces electricity. A project the two jointly worked on involves bridge safety monitors that are “powered” by the vibrations of the bridge itself, as cars and trucks pass overhead.

While at Virginia Tech, Dr. Sodano received the NASA Graduate Student Research Program Fellowship in 2003, was awarded the prestigious Directors Funded Post Doctoral Fellowship at Los Alamos National Laboratories, earned the best paper at Society for the Advancement of Material and Process Engineering’s 2008 fall technical conference, received the Paul E. Torgersen Research award at Virginia Tech in 2004 and 2005, and was selected in 2007 for the U.S. Air Force Research Laboratory’s Air Vehicles Directorate Summer Faculty Program.

Dr. Sodano and Dr. Inman still keep in touch. “We also became friends as often happens during a Ph.D. program and we continue to interact both professionally and socially,” Dr. Inman adds. “It was clear to me while he was a student that he was going to become a very successful faculty member.”

Dr. Sodano joined the faculty at ASU in 2007, having previously served as an assistant professor at Michigan Technological University. He has published roughly 90 technical articles since 2002 (five book chapters, 38 refereed journals and 43 proceedings) and serves as an associate editor of two archival journals: Smart Materials and Structures and the Journal of Intelligent Material Systems and Structures.

He also was awarded ASU’s 2009 Faculty Achievement Award for Defining Edge Research. In 2009, he was awarded the National Science Foundation’s CAREER award, an honor given to creative junior faculty likely considered to become academic leaders of the future. The $404,478 research grant will fund the study on the influence of the nanowire interphase on the mechanical and multifunctional properties of a fiber reinforced composite, in this case a ceramic interface. “We grow a ceramic nanowire layer on the surface of a reinforcing fiber which greatly increases the interfacial strength leading to lighter weight and stronger composite materials,” Dr. Sodano says. ASU says the research could have broad medical implications, including improved prosthetic and biological implants.

He has designed a backpack using material capable of producing an electrical charge through the force of the motion of its wearer. Through the conductive capability of the material, friction caused by the movement of the backpack wearer is converted into electrical energy, enough to charge small batteries or power small electronics devices such as the above-mentioned MP3 player, or a cell phone, or even flashlight. The backpack’s shoulder straps, according to an ASU press release, are made of polyvinylidene fluoride, a flexible material similar to nylon. The material makes the straps piezoelectric, able to generate and transfer an electrical charge when force or pressure is applied to them, hence energy harvesting.

The future may bring more discoveries and headlines. “I am developing a variety of energy harvesting materials that can convert the ambient energy around us into electricity for powering small devices,” Dr. Sodano says. “We are also developing autonomous materials which can respond to damage and self toughen themselves to resist damage and ultimately reduce the chance of material failure.”

Dr. Sodano is married to Lisa and has one son, Henry Jr. Between his busy work schedule and cherished time with family, he enjoys the occasional round of golf.