



HOWARD & TAU UNIVERSITY BETA PI

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Forward (A Shared History)

The key to success is teamwork and there have been many contributors to the success of engineering and Tau Beta Pi at Howard University in Washington, D.C., including students, faculty, administrators, and alumni. The six Tau Beta Pi members featured serve as examples. During the past 100 years under their leadership, Howard University's Engineering Department has opened the employment of black engineers to the nation's largest corporations and other employers, and made it possible for African-American architects and architectural styles to successfully compete with others. The District of Columbia Alpha Chapter has also demonstrated that a Tau Beta Pi Chapter at a Historically Black College or University (HBCU) can become a vital part of college life on their campus — and can successfully compete with other TBI chapters for national recognition and awards.

The Establishment of Howard University

The U.S. Congress chartered Howard University (HU) on March 10, 1867. President Andrew Johnson signed the official Charter establishing HU and proclaimed the school "a University for the education of youth in the liberal arts and sciences open to all races, sexes and social classes." The new institution was named for General Oliver Otis Howard, a Civil War hero, who was both the founder of the university and, at the time, Commissioner of the Freedmen's Bureau. He served as president of the university from 1869-74. In its first five years of operation, Howard University educated over 150,000 freed slaves. From the beginning, there was a complicated relationship between HU and the federal government. Early funding came from endowments, private benefaction, and tuition. Subsequent, major funding was provided by an annual congressional appropriation, administered by the U.S. Department of Education and with additional financial backing provided by the U.S. Department of the Interior. From 1867 until 1926, Howard had a white appointed university president. In 1926, Dr. Mordecai Wyatt Johnson Sr.,

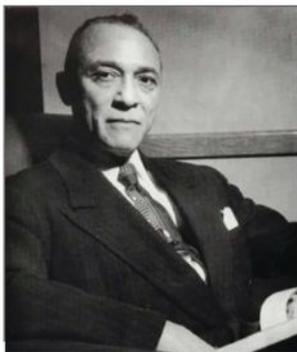
became HU's first African-American University President, serving until 1960.

The Introduction of Engineering

In 1907, the board of trustees approved two-year programs in civil, electrical, and mechanical engineering leading to bachelor's degrees. Howard, the first American university to offer engineering education to people of color, established those programs and introduced them into the curriculum of the School of Manual Arts and Applied Sciences. A four-year curriculum leading to the bachelor's degree was established in 1911 and a separate building was constructed and equipped. Eight years later, the School of Manual Arts and Applied Sciences was reorganized into the College of Applied Sciences, which included the departments of architecture, engineering, art, and home economics.

Lewis K. Downing, MI G 1921

The first dean of engineering at Howard University was Lewis King Downing, born on January 2, 1896, in Roanoke City, VA. He was a 1916 graduate of Johnson C. Smith University in Charlotte, NC. Subsequently, he attended HU graduating with a bachelor of science degree in civil engineering from the School of Engineering and Architecture (SEA) in 1921. He then attended the Massachusetts Institute of Technology, where he was the first black graduate of the Sloan School of Management undergraduate program. He returned to HU in 1924 as a civil engineering instructor in the SEA and was promoted to assistant professor and acting dean in 1926. He received a master of science in engineering degree from the University of Michigan in 1932. In 1934, the SEA was established as a separate unit of HU in recognition of the distinctiveness of the engineering and architecture professions. In 1936, Dean Downing was promoted to professor and dean of the SEA. Initially the school faced numerous obstacles including persistent low enrollment, budgetary disappointment, difficulty in attracting the number of quality faculty needed for a high-level engineering program, and advice from numerous high-level professionals to curtail the program. Fortunately, he and the dedicated members of his small faculty maintained their determination to create high quality engineering degree programs equivalent to those at state and private universities.



Lewis King Downing 1960.

Under Dean Downing's administration, the SEA rose from a loosely knit, unaccredited division with 38 students to a fully accredited engineering program with more than 900 enrollees. Howard was the first HBCU to have a fully accredited engineering program, under his leadership. He was also instrumental in removing the racial barriers which denied employment to black engineers in many of the nation's largest corporations. He brought to the HU campus representatives of many major companies and others to inspect the work of his students. At the time of his retirement in 1964, HU had graduated more black engineers than all of the nation's other colleges and universities combined and over 500 companies were recruiting Howard's engineering graduates. He was a member of more than a dozen professional societies and also served as advisor and consultant to highway and engineering agencies in Washington, D.C. and throughout the Mid-Atlantic area. In recognition of his contributions to HU, the engineering and architecture building constructed in 1952 was formally named Lewis King Downing Hall in a 1974 dedication ceremony. National recognition and awards he received during his 40 years as dean included honorary degrees of doctor of science conferred on him by Johnson C. Smith University in 1953 and Virginia State College in 1959. He was elected a Fellow of the American Society of Civil Engineers, a member of the Washington Academy of Sciences, the American Society for Engineering Education, and the National Technical Association, as well as Pi Mu Epsilon, Beta Kappa Chi Scientific Honor Society—the first African American STEM Honor Society, and Alpha Phi Alpha—the first intercollegiate Greek-letter fraternity established for African-American men.

He was initiated into Tau Beta Pi as a member of the MI Gamma Chapter at the University of Michigan, by the MD Beta Chapter at The University of Maryland on April 16, 1955. It is believed he has the distinction of being the oldest African-American TBPI member. Lewis King Downing died on October 19, 1967.



Howard University Engineering and Architecture Faculty in 1949. Including: Dean Lewis Downing, first row, 4th from left; Howard Mackey, first row, 3rd from left; & Walter Daniels, third row, 2nd from left.

Howard H. Mackey, DC A 1924

Howard Hamilton Mackey was born on November 25, 1901, in Philadelphia, PA. He had an early interest in architecture and building design and during the summer of 1920, he worked for architect, William A. Hazel, who was at that time connected to Howard University. He attended the University of Pennsylvania studying architecture and graduated in 1924 with a bachelor of science degree in architecture. Following graduation, he began teaching in the Department of Architecture at Howard. For the first several years, he would return to Philadelphia each summer to gain practical experience working in the office of architect Howard H. Jefferson. In 1929, he became acting head of the Department of Architecture at Howard. With the onset of the Great Depression, an attempt was made to abolish the department; fortunately, this effort was not successful.

In 1936, he took a one-year sabbatical leave to pursue a master of architecture degree at UPenn, which he received in 1937. Upon his return to HU, he was promoted to associate professor and head of the Department of Architecture, also serving as director of the architecture program. Under his leadership, Howard's five-year architecture program became the first at an HBCU to be accredited by the National Architecture Accrediting Board. He developed the Department of Architecture from a small, obscure educational unit of three



Howard H. Mackey 1945.



Lewis King Downing Hall: home of the Howard University College of Engineering & Architecture.

students to an enrollment, in 1960-61, of 164 students from 28 states and 13 foreign countries.

While on sabbatical in the 1950s, Mackey became an adjunct instructor in civil engineering at the University of Maryland, administering a U.S. Department of State Foreign Operations Administration aided-self-help housing program in British Guiana and Surinam to teach people the techniques of building their own low-cost homes. Through his three years of effort, approximately 4,500 low-cost homes were designed and built under the government's public housing programs.

Mackey was also largely responsible for the architectural aesthetics of the HU campus and the form, direction, and future of American public housing. In 1931, he organized an exhibition in the university's art gallery, highlighting the design work of the few licensed, practicing African-American architects in the United States at that time. Two of the participants in the exhibition were Hilyard Robinson, an east coast Howard educated architect, and Paul R. Williams, a leading west coast architect. Robinson respected Williams' success and stature in architecture and suggested that since black architects were prevented from bidding on government projects, they form a relationship with Irving Porter, a well-connected white architect in the Washington, D.C., area. Together, the three of them proposed a number of projects to the federal government. Their first success was the 1934 innovative design for Langston Terrace in D.C. Completed in 1937, this nationally acclaimed public housing project became a model for public hous-

ing projects in many parts of the country and gave Williams and Robinson the local and national stature needed to apply for commissions with the federal government, including those for the HU campus.

While prior to 1937, nearly all campus buildings were designed and built by white architects selected by the U.S. Department of the Interior, beginning in 1938, many of the commissions went to the joint-venture practice of Robinson and Williams. As a result, the traditional Victorian-revivalist styles of building designs on the HU campus were replaced by the modern streamlined look both men favored. Seven named buildings designed by Robinson and Williams were constructed on the campus including the 100,000 square-foot ultra-modern, U-shaped Engineering and Architecture Building that was completed in 1952. The building contained offices, classrooms, and state-of-the-art laboratories comparable to those at the nation's other leading universities with fully accredited engineering and architecture programs.

A registered architect and a member of the American Institute of Architects, Mackey gained Fellowship status, in 1962 with the AIA, and in 1983 received their "Whitney M. Young Jr. Citation" for his influence on African-American architects in the United States. Membership in other professional organizations included: Association of Collegiate Schools of Architecture, Architectural League of New York, American Society of Engineering Education, National Technical Association, and the board of trustees of the Council for the Advancement of the Negro in Architecture.

Howard Mackey served as professor and Director of the Architecture Program at Howard University for 32 years until his formal retirement in 1968. Shortly after retiring, he returned to HU to help create a program in city planning within the School of Architecture and was awarded a Ford Foundation grant to implement the new School of Architecture and Planning.

He was initiated into Tau Beta Pi by the DC Alpha Chapter as a member of the class of 1924 on May 14, 1966. Howard H. Mackey died on August 20, 1987.

Walter T. Daniels, AZ A 1929

Dean Walter T. Daniels, Ph.D., was born on April 26, 1908, in Texas. He attended the University of Arizona and received his bachelor's of science in civil engineering in 1929. He then attended Iowa State College (now Iowa State University) where he received his master of science degree in civil engineering in 1932. Following graduation, he worked at several HBCUs, first as professor of mechanical arts at Prairie View Agricultural and Mechanical College, (now Prairie View A&M University) in Prairie View, TX. In 1934, he became professor of physics at the Agricultural and Technical College of North Carolina (now North Carolina Agricultural and Technical State University) in Greensboro, NC. He also taught at Southern University in Baton Rouge, LA, before returning to Iowa State, where he graduated with a Ph.D. in civil engineering in 1942. He has the distinction of being the first African-American to receive a Ph.D. in engineering from Iowa State.

Daniels joined the Howard engineering faculty in 1943, where he was a civil engineering professor for the next 33 years, teaching mechanics, structural engineering, and topographic drafting. He was instrumental in the expansion of Howard's Civil Engineering Program and helped lead efforts to recruit minorities to the field. He also assisted in the development of HU's materials testing laboratory and made the structural design for the university's L.K. Downing Hall of Engineering, for which he won an award in 1952 from the Greater Washington Board of Trade.

In 1950, as a member of the American Society of Civil Engineers (ASCE), he helped found the organization's HU student chapter. In 1978, in recognition of his work establishing and developing the graduate civil engineering program at Howard, the ASCE elected him to its highest rank as an honorary member (now called distinguished member) of the society — the first African-American ASCE member to receive this honor.

Dr. Daniels was initiated into Tau Beta Pi by the AZ Alpha Chapter at The University of Arizona on April 26, 1952, as a member of the AZ Alpha class of 1929. Following his initiation, he, along with other TBPI faculty members at Howard, encouraged and assisted engineering students who met the requirements for membership, to petition for a Tau Beta Pi chapter at Howard University. At the 1955 TBPI National Convention, the petition was approved. The District of Columbia Alpha Chapter was formally installed at Howard on March 10, 1956, becoming the 100th Chapter of the Association and the first TBPI chapter at an HBCU. In recognition of his contribution in establishment of the chapter, Dr. Daniels was elected by the student members to serve as the chapter's Chief Advisor, a position he held for many years.

Walter T. Daniels retired from HU in 1976 and died on May 3, 1991.

Irving W. Jones, DC A '53

Irving Wendell Jones, Ph.D., was born on November 16, 1930, in Washington D.C. He received his bachelor of science degree in civil engineering (magna cum laude) from Howard in 1953. While a student, he was a member of the student council, the engineering and architecture honor society, and was also a varsity tennis athlete. He served in the U.S. Air Force from 1953-56. After leaving the Air Force, he attended Columbia University, where he was a Guggenheim Fellow in the Institute of Flight Structures. He earned a master of science degree in applied mechanics from Columbia, and in 1967, he received his Ph.D. in applied mechanics from the Polytechnic Institute of Brooklyn.

Dr. Jones began his professional career in the aerospace industry in 1957, working as a structural methods engineer for Grumman Aerospace Corporation in Bethpage, NY, followed by a year with the Fairchild-Hiller Corporation in Bayshore, NY, where he was structures group leader in their Space Systems Division. In 1963, he joined Applied Technology Associates, Inc., as assistant director, where he performed and supervised research, development, and engineering analysis projects in the area of structural mechanics. He made significant contributions to the country's aerospace programs, including the F-111 swing-wing fighter plane and the Apollo Lunar Landing Module. He also participated in studies on the feasibility of a lunar landing and was active in research to develop methods for using computers as an engineering tool for structural design and analysis.

In 1969, he was hired by Howard as an associate professor in the Department of Civil Engineering. His main task was to organize the new graduate program in civil engineering, which included development and teaching of graduate level courses in structures and mechanics, as well as, performing and supervising research. He was promoted to professor and chair of the Department of Civil Engineering in 1972. During his tenure as department chair, the graduate programs expanded to encompass both master and doctorate degree programs. He took a two-year leave of absence to work as a structural engineering specialist for the Aerospace Corporation, El Segundo, CA, in support of the Air Force space program. Dr. Jones returned

to HU in 1983 as a professor in the Department of Civil Engineering and director of the Computer Learning and Design Center. He was also a member of the HU Large Space Structures Institute, supported by the National Aeronautics and Space Administration (NASA). The work of the institute related to the modeling, dynamics, and control or optimization of large space structures. Dr. Jones' involvement related to deployable dynamics, particularly in the development of rigid structures that could be constructed on Earth, folded to fit in a space shuttle, and opened after being transported to space.

His involvement with Tau Beta Pi began while he was a student at Howard. He was included as a charter member of the DC Alpha Chapter at HU when it was installed in 1956 and was formally initiated as a TBPI member on April 27, 1957, as part of the class of 1953. During his time as chairman of the civil engineering department and later as a professor in the department, he served as DC Alpha Chapter Chief Advisor and Treasurer. In 1975, he recruited Dr. Robert Efimba to join the civil engineering faculty as an assistant professor. He convinced Dr. Efimba to become a DC Alpha Chapter faculty advisor and later groomed him for the position of Chief Advisor. When Dr. Efimba became Chief Advisor in 1987, Dr. Jones continued to serve as an advisor and treasurer until his retirement in December 1998. Dr. Jones died on September 7, 2000.

Continues on page 40.



Irving W. Jones in 1953.



Irving W. Jones in 1977.

M. Lucius Walker Jr., DC A '57

M. Lucius Walker Jr., was born on December 16, 1936, in Washington, D.C. At the age of fifteen, after attending Armstrong High School for one year, he received a Ford Foundation scholarship to attend Morehouse College in Atlanta, GA. He transferred to Howard University to study engineering, graduating with his bachelor of science degree in mechanical engineering in 1957, the first HU engineering student to graduate summa cum laude. He continued his studies at Carnegie Institute of Technology (now Carnegie Mellon University) in Pittsburgh, PA, earning his master of science degree in mechanical engineering in 1958 and his Ph.D. in 1966. While studying for his doctorate, he was employed as an instructor by both the Carnegie Institute and Howard.

He joined the HU faculty in 1963 as an assistant professor in the Department of Mechanical Engineering and upon receiving his Ph.D., was promoted to associate professor. He became a full professor in 1970 and in 1976, a graduate professor of mechanical engineering and the acting dean of the school of engineering. He was appointed dean in 1978 and served in that capacity until his retirement in 2002, when he became an HU professor emeritus.

Dr. Walker was a charter member of the DC Alpha Chapter. He was instrumental in the establishment of two national scholastic organizations that worked to increase the number of minority students in engineering. In 1972, he co-founded and directed the Engineering Coalition of Schools for Excellence in Education and Leadership, a National Science Foundation-sponsored coalition of engineering schools at seven major universities. He co-founded the Advancing Minorities Interest in Engineering Organization in 1991 to expand corporate, government, and academic alliances to attract, educate, graduate, and place underrepresented minority students in engineering careers.



M. Lucius Walker in 1955.

During his time as dean, he supported TBPI and other HU honor and professional societies, vigorously promoting the inclusion of humanities and science courses in the engineering curricula and championed a technical and liberal education through extracurricular activities. He was a proponent of writing and during his tenure as dean, *The Howard Engineer Magazine* garnered many national awards. He also promoted the community involvement of engineering students such as volunteering at soup kitchens and at local K-12 schools to help educate young students about the role of science and engineering in their daily lives.

His concern for the human condition, and the need for compassionate engineers, extended beyond the university campus to national and international locations. He was instrumental in supporting the HU collaborative, interdisciplinary project with the Republic of South Africa, which sent student teams to help improve local universities and advance living conditions. He served on the board of directors at Carnegie Mellon University, the Alexandria-based nonprofit group Junior Engineering Technical Society, and the Center for Naval Analyses, a military-affiliated think tank in Alexandria, VA.

A recipient of numerous notable awards, Dr. Walker received the Black Engineer of the Year Award from *U.S. Black Engineer and Information Technology* magazine in 1988 and in 2008, received the Howard University Distinguished Alumni Achievement Award. In 2013,



M. Lucius Walker in 2012.

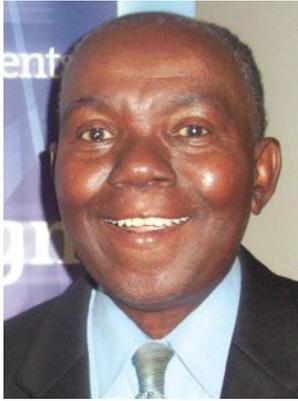
he was selected to receive the TBPI Distinguished Alumnus Award in recognition of his innovative leadership, dedication to improving engineering curricula, and pioneering work in humanitarian efforts. Unfortunately, he died a few months prior to the award presentation and was honored posthumously on November 2, 2013, at the 108th TBPI Convention held in Ames, IA. M. Lucius Walker Jr. died on June 6, 2013.

Robert E. Efimba, MA B '63

Robert E. Efimba, Sc.D., P.E., with roots in the village of Dienyi in the Oroko tribe, was born on November 1, 1939, in the town of Mamfe in Southern Cameroons (now South-West Cameroon), where his father was stationed as a public elementary school teacher. The value and need for education was imprinted on him very early in life by his parents and grandparents who served as role models. His maternal grandfather instilled in him a moral compass that he continues to use to treat all persons with respect and compassion, regardless of their race, gender, religion, rank, or economic/social status.



1867



Robert E. Efimba in 2019.



Robert E. Efimba in 1965.

Dr. Efimba stated that as early as age 10, he saw the need for improved housing, clean drinking water, and better roads, and was motivated to become a civil engineer when he grew up. As a result of his high academic performance in high school, he was selected by the Cameroons Development Corporation to receive a full scholarship to the Massachusetts Institute of Technology (MIT). He credits the scholarship award to the intervention of the late MIT Professor Carroll L. Wilson whom he considers his benefactor.

He received four degrees in civil engineering from MIT: B.S. (1963), M.S. (1965), professional degree (1969), and Sc.D (1972). Dr. Efimba is enshrined in the MIT Museum with a photo (above) showing him designing the support system of the 13-ton Blue Whale Exhibit in the New York City Museum of Ocean Life. He is a registered professional engineer and has had a long and distinguished career as a practicing civil engineer and is now chairman of the board of the STODAD Corporation, Engineering Consultants. He has received numerous honors for his service to the engineering profession. As past president of the District of Columbia Council of Engineering and Architectural Societies, he was honored in 2013 with their Council's Lifetime Achievement Award. Dr. Efimba is also a life member of ASCE and past co-recipient of their Moissieff Award for best paper in the field of structural design, related to the 82-story SOI building in Chicago, IL.

In addition to his distinguished career as a civil engineer, Dr. Efimba has also been recognized as an outstanding educator and student mentor. After receiving his master's degree, he served as a lecturer in civil engineering at the University of Nigeria, Nsukka, and worked as an engineer with the public works department in Victoria (now Limbe), Cameroon, where he designed the Limbe Bridge that was opened to traffic in 1967. In 1975, he joined the Howard University civil engineering faculty as an assistant professor and, as an associate professor of civil engineering since 1982, has been teaching courses in engineering mechanics, matrix structural analysis, and design. Dr. Efimba is known for challenging and motivating students to look around them to see the important role and impact that civil engineers have on the lives of people, and to strive to be the best engineers they can be by working to attain professional licensure to practice, teach, or perform research. He inspires his students when they graduate to create great civil engineering works, but also find ways to serve the many peoples of the world who live in poverty and are in need of even the most basic infrastructure components. He has been honored numerous times for his research and teaching, including receiving a 2012 Centennial Career Achievement Award from the College of Engineering, Architecture, and Computer Sciences at Howard.

Dr. Efimba became a DC Alpha Chapter Advisor in May 1977 and has served as Chief Advisor since 1987. He credits the successes of the chapter to great teamwork, collaboration, and dedication by fellow advisors and chapter officers, with outstanding support from the dean, provost, TBIT's District 4 Directors, and Headquarters staff. The DC Alpha Chapter was the first at an HBCU, having been established at Howard University as the 100th TBIT chapter. During his 34 years of leadership as Chief Advisor, DC A has risen to become one of the preeminent Association chapters. He has been cited by DC A chapter officers and members for his personality and commitment to inspiring excellence.

Under his leadership, the image and visibility of TBIT at Howard has greatly increased, including the university administration's recognition and appreciation of the chapter as a vital part of college life. Joining Tau Beta Pi is widely sought by HU engineering students, with initiation and membership acceptance rates of eligible students near 100 percent. In 1977, DC A had fewer than 550 total members. In October 2020, this number had increased to 1,493 total members; therefore, two-thirds of all DC A members have been initiated since he became a chapter advisor and more than half of all members have joined while he has been Chief Advisor. From the TBIT Association, DC A and its members have received numerous awards including: 19 Fellowships, 26 Scholarships, 7 Distinguished Alumnus Award recipients, 2 Laureate recipients, 3 Greater Interest in Government project grants, and in 2016 the chapter received the Association's highest award as the nation's best chapter, the R.C. Matthews Outstanding Chapter Award.

In 2010, Dr. Efimba was recognized as the TBIT Outstanding Advisor, the Association's top advisor award. In nominating him for the award, his chapter stated: "While there are definitely a number of outstanding advisors throughout Tau Beta Pi, none of them is perhaps as essential and appreciated as Dr. Efimba is at DC Alpha." He continues to be an important contributor both to the success of the chapter and the work of the Association.