

IN MEMORIAM
ALFRED W. NOLLE

Alfred Wilson Nolle was born July 28, 1919, in Columbia, Missouri to Dr. Alfred H. Nolle and Berda Stuart Wilson Nolle. His father, a faculty member at the University of Missouri, received his Ph.D. in 1915 from the University of Pennsylvania. His thesis was entitled *The German Drama on the St. Louis Stage*, a sharp deviation from his interest in philology. In September, shortly after Wilson's birth, the family moved to San Marcos, Texas, where Dr. Alfred Nolle joined the faculty of the school which, in the 1920s, was given the name Southwest Texas State Teachers College (SWTSTC). He became Dean of the college, serving until 1959; Berda was a music teacher. Wilson, who was their only child, Wilson had an interest in music from an early age that he nurtured in many forms throughout his life.

Wilson Nolle graduated from the eleven-grade San Marcos school system in May 1935. He entered Southwest Texas State Teachers College in the fall of 1935 and completed the B.A. degree in May 1938 with a major in chemistry and a minor in physics. In the fall semester of 1938, he enrolled at The University of Texas in Austin. Wilson had met UT Austin Professor Charles P. Boner a year or two before when he gave a demonstration lecture in San Marcos. Wilson was particularly interested in his courses on electronics and acoustics. In 1939, Boner supervised Wilson's M.A. thesis research, and Wilson received the Master of Arts degree in physics in August 1939. His thesis was entitled *The Effects of Common Plate Impedance in Audio Amplifiers*. He continued graduate study at UT Austin until December 1941; during this time, he came to know several research students working under Professor Boner on the acoustics of musical instruments. He would particularly remember Robert B. Newman, whom he saw frequently in later years at the

Massachusetts Institute of Technology (MIT) where Newman became a celebrated professor of architectural acoustics.

Wilson describes his activities in 1940–41:

Having taken courses in acoustics and becoming familiar with laboratory equipment used by the Boner students, I did an experimental study on musical acoustics for my own edification (not intended for a dissertation). The basis for this was the presence in the Physics Building of a pipe organ that had been installed ca. 1935–1936 under Professor Boner's direction. The four-manual console was constructed in the physics shop. The pipework, wind supply, etc., were largely from theater organs that were available at greatly reduced prices after 'talking' pictures became standard. Two two-manual former theater organs, one by Wurlitzer and one by Wicks, were among the resources incorporated into the physics organ. In addition, there was a sixteen-foot pedal stop consisting of open-ended wooden pipes of unusually large scale (i. e., cross-section), which were very slow to 'speak' (that is, more than half a second was required for the sound, starting approximately an octave above final pitch, to reach full output after the key was depressed). While, for pipes of higher pitch, this initial transient cannot be followed in detail by listening, oscillograms can provide a visual record for analysis. A device to move 35mm film at a steady velocity, built in the physics shop, was used to record a selection of these 'initial transient' waveforms. The results were presented at the New York meeting of the Acoustical Society of America in October 1941 and published shortly afterward in the Society's journal.

Wilson comments further on the physics program at UT Austin in 1938–41:

Professor Lacoste, and later Professor Romberg, left the faculty in order to devote full time to the very successful commercialization of their gravity meter. A consequence was that quantum mechanics was not offered for several semesters. In 1941, this gap was filled when Professors Paul Fine and Alvin Graves joined the faculty. I think the gap occurred again during World War II, but was closed when Professor Al Matsen took a joint chemistry/physics appointment, and other new faculty were added in the late 1940s and thereafter.

In December 1941, Wilson became a research associate at Harvard University in what was later the Harvard Underwater Sound Laboratory (HUSL). The background for his appointment is of interest. In 1941, Harvard University contracted to organize an underwater sound laboratory that would perform research for the United States Navy. It was originally named "Anonymous Research, F. V. Hunt." In the fall of that year, Professor F. V. Hunt, the Director, visited the UT

Austin Physics Department, and particularly Professor C. P. Boner, to recruit personnel. Several advanced students accepted appointments. Wilson said that he preferred to continue graduate degree research “unless an emergency develops.” Following the Pearl Harbor event, Professor Hunt sent a telegram asking “Is this sufficient emergency?” During the following week, Wilson traveled to Cambridge and joined Professor Hunt's group, where he was employed through the summer of 1945. In mid-1942, Professor Boner had joined the Harvard laboratory as Associate Director.

In the fall of 1945, Wilson enrolled for graduate study in physics at MIT. He also received a research appointment in a new acoustics laboratory under Professor Richard H. Bolt. A major project was to investigate the acoustical behavior of massive metal plates coated with a thin porous layer of elastomer. Wilson researched the problem of measuring the viscoelastic properties of elastomers in isolation and thus entered into the study of condensed matter. In 1947, he submitted to MIT a doctoral dissertation entitled *Dynamic Mechanical Properties of Rubber-Like Materials*, leading to his receiving a Ph.D. in physics in September.

While working at the Harvard Underwater Research Laboratory, Wilson met Margaret Ann “Peggy” Phillips, a Radcliffe graduate who was working at the nearby MIT Radiation Laboratory. Peggy was the oldest daughter of Fred K. and Marian D. Phillips of Claremont, New Hampshire. They were married in Claremont on August 24, 1946.

In January 1948, Wilson joined the faculty of The University of Texas in Austin as Assistant Professor of Physics. With the cooperation of graduate students, he continued research on condensed matter using ultrasonic techniques, but soon moved on to nuclear magnetic resonance as a result of the influential 1948 publication *Relaxation Effects in Nuclear Magnetic Resonance Absorption* (Bloembergen, Purcell, and Pound), which showed that nuclear magnetic

resonance reveals molecular processes akin to those in viscoelasticity. While engaged in summer work at the MIT acoustics laboratory, Wilson visited an early magnetic resonance laboratory that made use of a large permanent magnet, designed by Professor Francis Bitter, that provided a stable magnetic field without needing a large electronic power supply. Working from Professor Bitter's drawings, Wilson had a copy of the MIT magnet built in the instrument shop of the UT Austin Physics Department. This magnet assisted in the doctoral research of several graduate students until the availability of high-current transistors made it convenient to use magnets with regulated electronic power supplies. Several studies concerned phase changes in crystalline solids and involved fluorescence as well as magnetic resonance.

In 1963, Wilson, with colleagues at The University of Texas Defense Research Laboratory, published the paper *Acoustical Properties of Water Filled Sand* in the *Journal of the Acoustical Society of America*. This paper has received, and continues to receive, many citations. Wilson's lectures were always beautifully organized and content-rich. He was careful about details, and students valued their notes long after they graduated.

In 1969, at the urging of Professor William Sutherland of the English Department, Wilson, who was known across the campus as a principled man of high integrity, agreed to be elected President of the UT Austin chapter of the American Association of University Professors. He was eager to have faculty from numerous departments involved. It was an eventful tenure: there were extensive hearings on an academic freedom case and the Association successfully advocated a faculty vote to create a faculty senate, which functioned for several decades.

An accomplished organist, Wilson built a pipe organ in his home. He and Peggy were strong supporters of classical music in Austin and regularly attended performances. Peggy was

active in the League of Women Voters, Meals on Wheels, and other charitable organizations in Austin.

In 1989, Wilson retired, becoming Professor Emeritus in 1995. For several years (starting shortly before retirement), he returned to an early research interest: the start-up transients of flue organ pipes, using an adjustable pipe constructed in the physics shop.

Wilson's research included acoustics and condensed matter physics (elastomers, polymers, and crystalline solids) and, with his research into the physics of musical instruments, he was honored as a Fellow of both the American Physical Society and the Acoustical Society of America.

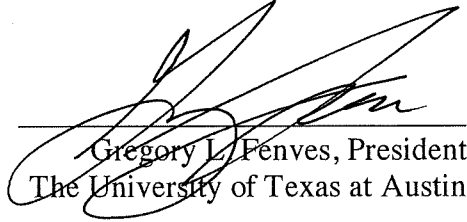
Inveterate travelers, Peggy and Wilson made many trips abroad. Despite his having a number of health challenges, Wilson maintained a travel schedule that would tax those many decades younger.

Wilson was a devoted member of All Saints Episcopal Church in Austin, supported Meals on Wheels, which Peggy helped found in Austin, enjoyed the Austin Symphony, and was a lifetime member of the International Acoustical Society, where he often presented his acoustics of music research. He was an accomplished pianist and delighted in playing his Johannus digital organ, traveling, reading, and visiting his many lifelong friends and colleagues. He was always inquisitive and had an amazing capacity for sharing his knowledge and interests with a humble and kind heart with everyone he encountered.

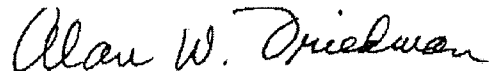
Peggy died in 1999. Wilson died on February 11, 2017, at the age of 97.

Photographs and detailed information about Wilson Nolle may be found at:

<https://web2.ph.utexas.edu/utphysicshistory/AWilsonNolle.html>



Gregory L. Fenves, President
The University of Texas at Austin



Alan W. Friedman, Secretary
The General Faculty

This memorial resolution was prepared by a special committee consisting of Professors Melvin Oakes (chair), John David Gavenda, and Alex de Lozanne.