

In Memoriam: Frank M. White (1933–2022)



Frank M. White, Editor-in-Chief of the ASME Journal of Fluids Engineering (1979–1990)

An ASME Fellow and former Editor-in-Chief of the ASME *Journal of Fluids Engineering* (1979–1990), Frank M. White, Jr. passed away on March 12, 2022. Frank was born on September 26, 1933 in Augusta, GA, to Frank M. White, Sr. and Dorothy Dorr. After graduating high school from the Marist College in downtown Atlanta, he joined the Georgia Institute of Technology (Georgia Tech) in 1949, earning a Mechanical Engineering Bachelor of Science degree in 1954. He then transitioned to the Massachusetts Institute of Technology (MIT), specifically, to Ascher H. Shapiro's Fluid Mechanics Lab, where he pursued a Master of Science degree. After receiving his M.S. in Mechanical Engineering, he returned to Georgia Tech in 1956, where he completed a doctoral degree with Mario J. Goglia, one of the first three Regents Professors of Mechanical Engineering [1]. His committee included Charles W. Gorton and Arnold L. Ducoffe, the future Director of the Aerospace Engineering Department (1964–1986). His doctoral dissertation was titled, "Laminar Flow in Porous Ducts," a signature theme that would later recur in his widely popular textbook, *Viscous Fluid Flow* [2].

Frank started serving on the Aerospace Engineering faculty at Georgia Tech in 1957 while still attending to his doctoral degree requirements in Mechanical Engineering. He completed the latter on May 8, 1959 and then, after 5 years, in 1964, he joined the University of Rhode Island (URI) as an Associate Professor of Mechanical Engineering and Applied Mechanics. Given the availability of coastal waterfronts around URI, Frank quickly recognized the significance of training a new generation of engineers who would be skilled in underwater acoustics and ocean sensing technology. This interest was partly prompted by the need to promote early detection of icebergs and underwater threats—problems that became critical in the wake of the Titanic shipwreck and World War II. In 1966, he joined hands with Foster Middleton and, together, they cofounded the first Department of Ocean Engineering in the United States.

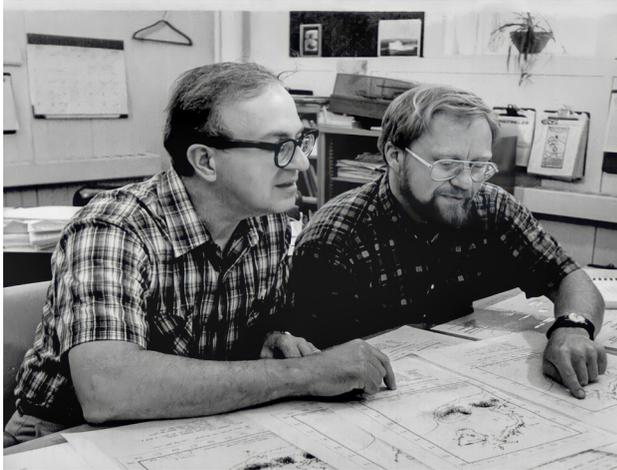
Frank's career underwent a rapid academic progression to the extent that, after 8 years of receiving his Ph.D. degree, he was elevated to the rank of full professor in 1967. By that time, he was already creating and offering Ocean Engineering courses while helping to recruit and accelerate the growth of the Ocean Engineering program. In 1973, he published a rather encyclopedic monograph, *Viscous Fluid Flow* (VFF) through McGraw-Hill, which many perceived as constituting a "one-stop-shop" for intermediate and advanced viscous flow concepts, problems, and solutions. The book quickly gained popularity and was adopted by

Shapiro at MIT. The timely release of VFF filled a major gap in the literature by providing thorough coverage of boundary-layer theory and valuable mathematical tools that were essential to the advancement of fluid mechanics research. Six years later, Frank released another widely successful undergraduate textbook, *Fluid Mechanics* [3], which provided an extensive coverage of fundamental fluid principles. Both texts became well known in the community for their emphasis on mathematical rigor and overall clarity, the two hallmarks of Frank's writings. The fourth and last edition of VFF that Frank directed and released in 2021 contained several noteworthy additions. These encompassed 200 new references, 7 new appendices, 128 new exercises, and several modern solutions to problems and paradoxes in fluid mechanics that had remained unresolved for over a century. These included, for example, compelling solutions to the 1921 Pohlhausen polynomial paradox and the 1908 Blasius equation, whose analytical solution was featured therein [4]. Two lesser known textbooks by Addison-Wesley, *Heat Transfer* [5] and *Heat and Mass Transfer* [6], were published in 1984 and 1988, respectively.

In addition to his broad research interests in a variety of thermo-fluid problems, Frank was mostly known for being a highly cherished educator and mentor. His devotion to his institution's teaching, research, and outreach missions extended over a period of 34 years. During that time, he remained an active member of URI's faculty senate, serving as senate president in 1984–1985. He retired on December 21, 1997, after three decades of dedicated service. Besides his two McGraw-Hill textbooks, which had a profound impact on shaping fluid mechanics education globally, Frank was involved in the hiring, promotion, and tenure of countless faculty members, not only at URI but worldwide. I happen to be one of them. When asked about his philosophy on tenure, Frank often shared the viewpoint of his first academic supervisor, Jesse W. Mason, the Dean of Engineering at Georgia Tech: "Can you do without this person? If not, promote them and give them tenure at the appropriate time." As to his viewpoint on research, it is related to us through Debendra Das, one of his former doctoral students: "Seek the simplest form of the solution whenever you can. The simpler your final solution, the more elegant your result." By skimming over his publications, it is perhaps this unwavering quest for simplicity that underscores most of his writings.

The fact that Frank was an exceptional teacher is not only supported by numerous testimonials received from those who knew him but also ratified through local and national recognitions that were conferred upon him by different institutions. Besides being named ASEE Professor of the Year, he received the annual ASEE George Westinghouse Teaching Excellence Award as well as the University of Rhode Island Teaching Award seven times. He was also recognized by ASME through the prestigious Lewis F. Moody Research Award in 1973 and the ASME Fluids Engineering Award in 1991. The latter was based on his "*outstanding contributions over a period of years to the engineering profession and, in particular, to the field of fluids engineering through research, practice, and teaching.*"

As part of his service record within ASME, Frank was fully devoted to the success of the ASME *Journal of Fluids Engineering* (1979–1990), serving as Editor-in-Chief for a period of 12 years. Moreover, he went on to chair the ASME Board of Editors (1991–1997) for 7 years while participating on the Publications Committee until 2009. In addition to his sustained support for ASME, he served for 5 years as Consulting Editor (1992–2006) for McGraw-Hill's Encyclopedia of Science and Technology. Then, much to his surprise, Frank was selected by his *alma mater* for the 1990 George W. Woodruff School of Mechanical Engineering Distinguished Alumnus Award; this recognition had just been inaugurated in 1989 to identify the most prominent alumnus



Frank M. White and Malcolm L. Spaulding overviewing results of their coastal modeling efforts for the North East region, specifically, Georges Banks and the Gulf of Maine, circa 1980

of Georgia Tech. Frank was subsequently elected to the prestigious Academy of Distinguished Georgia Tech Alumni in 1994, while still actively serving as Professor of Mechanical and Ocean Engineering at URI.

Among his best kept secrets, Frank not only loved baseball and tennis, he was a classical composer and played the piano almost daily. In fact, one may argue that he exemplified what a four-dimensional scholar and renaissance person could achieve. His ballet titled “Burnt Mountain Suite” was an Atlanta favorite. “Window to God” was another popular 1971 hymn that he wrote during his sabbatical in La Jolla, which is still sung at the “All Hallows Catholic Church” that he attended. His “Hymn to Saint Jude” also became the school song at Saint Jude Catholic School in Atlanta.

In the words of his daughter, Ellen Emerson White, “Frank spent his life quietly helping others, whether it was family, friends, students, or his community. He was unfailingly kind and generous; and, around the people who were closest to him,

hilarious, in this sharp, incisive, and sometimes quite wicked way.” I must add that Frank was one of the most beloved and influential fluid dynamicists, whose widely adopted textbooks have guided and inspired several generations of scholars from all around the world. He remained lucid and in good spirits to the very end. In his last weeks, he simply stopped eating and then, just like that, returned to God peacefully on March 12, 2022. At age 88, he is now featured on URI’s Honor Wall, side-by-side with Igor Sikorsky.

And yet, this *In Memoriam* will be most incomplete if we did not make mention of one immutable constant in Frank’s life, that never wavered or faltered. Jeanne Faucher, his beloved wife of 50 years, to whom he dedicated every single textbook and revision that he ever produced, even after her passing in 2009.

So long my dearly departed friend, until we meet again.

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