FERNANDO VASCO COSTA

1913–1996

Elected in 1989

"For distinguished contributions to the theory and practice of ship berthing, mooring, and maritime structure design."

BY THORNDIKE SAVILLE JR. AND ROBERT L. WIEGEL

FERNANDO VASCO COSTA, educator, researcher, consultant engineer, and internationally recognized authority on port engineering and the design of marine structures, died October 20, 1996, at the age of 83. He is survived by his wife of 52 years, Fernanda da Silveira Vasco Costa, and three children and eight grandsons. His son Augusto and three of his grandsons became architects.

Elected to the National Academy of Engineering in 1989 as the first (and, so far, only) Foreign Associate from Portugal, Fernando Vasco Costa was cited for his contributions to ocean and marine engineering, particularly in the mooring and berthing of ships. He had a distinguished career as a professor of civil engineering at the Instituto Superior Tecnico in Lisbon, where he was a tenured professor, and at the Technical University of Lisbon, where he also served as rector from 1969 to 1971. In addition, for many years he was an active researcher at the Centro de Estudios de Engenharia Civil (Civil Engineering Research Center) and the Laboratorio Nacional de Engenharia Civil (Portuguese National Laboratory for Civil Engineering). In 1985, he was awarded the Manuel Rocha Research Prize by the latter institution.

Vasco Costa was born in Lisbon in 1913, the eldest son of Ines Vasco Serra Costa and Augusto Serra Costa, a maritime officer. After graduating as a civil engineer from the Instituto Superior

Tecnico in 1936 at the age of 22, he went to work as a design and site engineer in charge of foundations and harbor projects for a German firm, Gruen and Bilfinger, A.G. From 1941 to 1943, he served in the Engineer Corps of the Portuguese Army. While stationed in the Azores, he met his future wife. The couple was married in 1944.

Vasco Costa held various academic positions at the two universities (they are affiliated) through 1980, when he became a full-time consulting engineer for harbor works in Lisbon. During his early years in academia (1946–1947), he was awarded a one-year scholarship in the United States—one semester at Cornell and one at the Bureau of Reclamation in Denver. In 1960, he was awarded a scholarship at the Hydraulics Research Station in Wallingford, England, where he worked on a thesis on the impact of vessels with berthing structures. During this period, he also founded CONSULMAR, an engineering consulting company; Fernando was director-general of the company from 1972 to 1980, and he worked there until his death in 1996. As a consultant, he participated in studies for all of the main Portuguese ports (Lisbon, Leixoes, Setubal, Sines, Viana do Castelo, Aveiro, Figueira da Foz, Portimao, Ponta Delgada, Funchal) and many foreign ports, such as Bissau (Guinea-Bissau), Ana Chaves (San Tome and Principe), Tenerife (Canary Islands), Mormugoa (India), Mocamedes (Angola), Maputo (Mozambique), and Ka-Ho (Macao).

The author of more than 50 papers and five books, mostly on various aspects of port engineering, Vasco Costa also wrote several papers on hydraulic modeling, another subject of great interest to him. He authored the *Tabelas Tecnicas,* a technical reference book used in Portugal by engineers for many years. He had a remarkable ability to combine a theoretical understanding of the physics of natural problems with the simplifications necessary to arrive at usable solutions—and an even more remarkable ability to express this understanding in terms that could be understood by others. His papers on the dynamics of berthing and mooring ships, including very large ships, were both theoretical and practical.

He was very involved in risk analysis of structures and structural

systems. As he said, "We must recognize and accept the fact that risks are inherent to any kind of human activity and refrain from designing structures as if we could ignore the gravity of the consequences of their possible modes and degrees of failure." He made important advances in how to treat the consequences of a structural failure from the standpoint of both direct cost and social cost. He used the concept of "utility" to compare and order alternative options without having to assign monetary values to human and social values. He asked, "How safe is safe enough? How grave is the failure?"

Vasco Costa was an invited lecturer at a number of foreign laboratories and institutions (Wallingford, Delft, Trondheim, Hanover, Buenos Aires, New York, Athens, and Paris), was active in professional societies, and was a leader in the international community. He was the representative from Portugal during the formation of the Engineering Commission on Oceanic Resources (ECOR), an advisory body to the Intergovernmental Oceanographic Commission (IOC) of UNESCO. Founded in 1971, ECOR was advisory to the international community on engineering aspects of protecting and exploring ocean resources and on marine affairs in general. At the Permanent International Association of Navigation Congresses (PIANC), he was a Portuguese delegate (1965–1981) and chief delegate and chairman of the Portuguese Section (1977–1981). He headed several PIANC working groups and was responsible for issuing their reports. Because of his diplomatic skills in working out corresponding, mutually acceptable, French and English translations (he was fluent in both languages), he was a frequent choice for editing committees charged with formulating conclusions at PIANC meetings. He organized and gave lectures at two NATO Advanced Courses, one on ship berthing and mooring in 1965 and another on application of the statistical theory of extremes to engineering in 1967.

Vasco Costa's international activities were officially recognized with the establishment in 1993 of the Professor Vasco Costa Scholarship, which provides funds to encourage young researchers to present papers at international scientific meetings at the Portuguese Institute for Marine Science and Technology. He was al-

ways enthusiastic about the spread of knowledge and the development of engineering assistance and practice through international relations. He was a fellow of the American Society of Civil Engineers and an assistant editor of two international journals, *Coastal Engineering* and *The Journal of Coastal Research*.

Vasco Costa was an accomplished equestrian who took every opportunity to ride and an ardent photographer who was never without his Pentax. His technical photographs added much to his professional presentations, and his personal photographs provided many happy moments for his friends and family. He also took great pleasure in music, an interest he shared with his wife, who came from a musical family and was an accomplished pianist. His friends abroad always looked forward to his annual Christmas gift of a bottle of vintage port. A gentleman of the old school, Vasco Costa was always courteous, polite, and considerate in making his point, but deliberate in making sure he was understood.