

A TRIBUTE TO PROFESSOR NICK PACE: ACOUSTIC BACKSCATTER, IMAGING AND CLASSIFICATION OF THE SEA FLOOR

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Professor Nicholas G Pace was awarded his PhD from Durham University in 1970 for his research entitled 'Ultrasonic propagation and binding in solids'. Shortly after this he started his long career in the Department of Physics at the University of Bath. He has conducted research and development in many areas of acoustics and sonar applications. He is particularly well known for his research on the interaction of high frequency acoustics with the seabed. This has been applied in mine countermeasure applications and for the measurement, classification and mapping of seabed sediments. His research encompasses a wide range of topics including propagation of sound in shallow water and fluctuations in the ocean. He has worked on many types of sonar, including echo sounders, sidescan sonar, multibeam echo sounders and parametric sonars. In more recent years his research has included developments in synthetic aperture sonar, which offers high-resolution sidescan images from the seabed, provided the variability can be compensated, and bistatic sonar.

He is widely published in many international journals and has many conference papers in the open literature. His work is frequently cited in others papers and he holds a number of patents, particularly from his collaboration with his former student, Jacques Guigne. In 1983 he organised and chaired the first in the series of Institute of Acoustics conferences on seabed and sediment acoustics and many of the papers from that conference are frequently cited. This has been followed by the seabed conferences, held at Bath University in 1993, 2006 and now this conference in 2015. He is a Fellow of both the Institute of Acoustics and Acoustical Society of America. He was an active member of the IOA underwater acoustics group committee for many years.

During his years at Bath University he was frequently called upon to conduct research for the Admiralty Scientific branches of the MoD (AUWE, ARE, DRA, DERA) where he was well known and highly respected. This research included many studies on various aspects of sediment acoustics, over a wide range of frequencies, but also included projects investigating shallow water acoustic propagation and bubble acoustics.

In the latter part of his career he was given leave of absence from the University to take up a position Saclantcen (now cmre) in La Spezia, Italy. During his time at the NATO centre he led teams investigating environmental acoustics (modelling, experimentation and statistical analysis), mine countermeasure sonar, force protection and seafloor mapping. He and his team also developed techniques for accurate ground truthing, including stereo photography and CT scanning of core samples. He also hosted many international scientists at the centre, as both visitors, as part of joint collaboration programmes and at the international conferences held in Lerici.

Professor Pace is now an Emeritus Professor at the University of Bath. The international underwater acoustics community, his colleagues and former students (many of whom still work the field of acoustics) are indebted to him for his excellent contribution, guidance and leadership.