This lecture series was created by the Ocean Studies Board in honor of the late Roger Revelle to highlight the important links between ocean sciences and public policy. The lecture is sponsored by the National Science Foundation, the Office of Naval Research, the United States Geological Survey, the Scripps Institution of Oceanography, and the Woods Hole Oceanographic Institution.

Photos provided by the Scripps Institution of Oceanography and the Monterey Bay Aquarium Research Institute.

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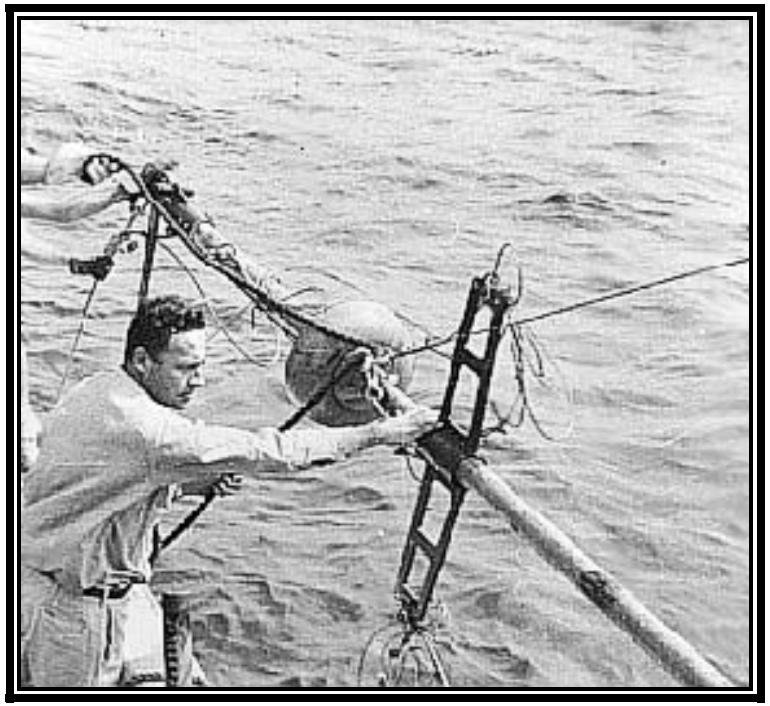


THE ROGER REVELLE
COMMEMORATIVE LECTURE

featuring

Dr. Peter Brewer

on

Contemplating Action: Storing Carbon Dioxide in the Ocean

Tuesday, November 9, 1999
at 4:30 p.m.
National Academy of Sciences
Auditorium

DR. ROGER REVELLE

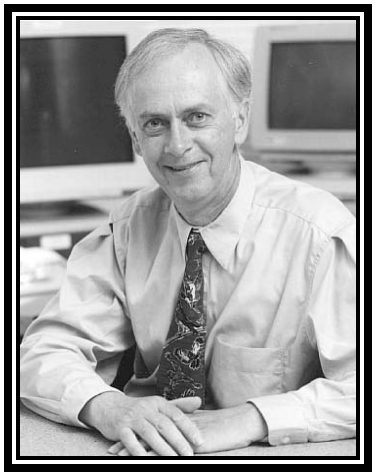
(1909 – 1991)

For almost half a century, Roger Revelle was a leader in the field of oceanography. Revelle trained as a geologist at Pomona College and at U.C. Berkeley. Then, in 1936, he received his Ph.D. in oceanography from the Scripps Institution of Oceanography. As a young naval officer, he helped persuade the Navy to create the Office of Naval Research (ONR) to support basic research in oceanography and was the first head of ONR's geophysics branch. Revelle served for twelve years as the director of Scripps (1950-1961, 1963-1964), where he built up a fleet of research ships and initiated a decade of expeditions to the deep Pacific that challenged existing geological theory.

Revelle's early work on the carbon cycle suggested that the sea could not absorb all the carbon dioxide released from burning fossil fuels. He facilitated the first continuous measurements of atmospheric carbon dioxide, leading to a long-term record that makes present-day discussions and research on global warming possible. Revelle kept the issue of increasing carbon dioxide levels before the public and spearheaded efforts to investigate the mechanisms and consequences of climate change.

Revelle was a proponent of daring programs, like Mohole and the International Indian Ocean Expedition, that addressed fundamental scientific questions and pioneered international cooperation. In 1960, Revelle left Scripps for important posts as science advisor to the Department of the Interior (1961-1963) and as the first director of the Center for Population Studies at Harvard (1964-1976). Revelle applied his knowledge of geophysics, ocean resources, and population dynamics to the world's most vexing problems: poverty, malnutrition, security, and education.

In 1957, Revelle became a member of the National Academy of Sciences (NAS) to which he devoted many hours of volunteer service. He served as a member of the Ocean Studies Board, the Board on Atmospheric Sciences and Climate, and many other committees. He also chaired a number of influential Academy studies on subjects ranging from the environmental effects of radiation to the study of sea-level change. Roger Revelle's life, although long, seems far too short to have encompassed all of his accomplishments.



DR. PETER BREWER

Senior Scientist, Monterey Bay Aquarium Research Institute

Dr. Brewer is an ocean chemist and Senior Scientist at the Monterey Bay Aquarium Research Institute (MBARI). He served as President and Chief Executive Officer there from 1991-1996. Prior to joining MBARI, he spent 24 years at the Woods Hole Oceanographic Institution and from 1981-1983 he was Program Manager for Ocean Chemistry at the National Science Foundation.

Dr. Brewer has taken part in more than 30 deep-sea cruises, and has served as Chief Scientist on major expeditions. His current research interests include the geochemistry of gas hydrates and the evolution of the oceanic fossil fuel carbon dioxide signal. Dr. Brewer is a Fellow of the American Geophysical Union (AGU) and the American Association for the Advancement of Science. He has served as a member of the Vice-President's Environmental Task Force and as President of the Ocean Sciences Section of AGU.

Contemplating Action: Storing Carbon Dioxide in the Ocean

Abstract: Concerns about global climate change suggest that we should level off, or even decrease, atmospheric carbon dioxide. Recent advances in ocean science hint at the possibility of taking active steps to achieve this. Experiments have shown that it is possible to inject carbon dioxide directly into the deep ocean, where it forms a solid gas hydrate. Other options have also been explored, such as fertilizing seawater to speed up the growth of microscopic plants that consume carbon dioxide. If we want to hold carbon dioxide levels steady, large interventions will be necessary. Is this even possible? And would there be unforeseen environmental consequences? Forty-two years after Roger Revelle's analysis of "the greenhouse" problem, society may be ready to take action through active use of the enormous buffering capacity of the ocean.