## MEMORIAL TO CARL JOSEPH SHIPEK

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Carl Joseph Shipek, pioneer marine geologist, died in San Diego, California, on September 6, 1969, after a long illness. He is survived by his wife, Florence M., and two sons Carl J., Jr., and David C.

Carl Shipek was one of a relatively small number of geologists who, after World War II, transferred their interests from land geology to the newly expanding field of sea-floor studies. He has secured his place among the pioneers of marine geology.

Carl received his undergraduate education in geology at the University of Washington, Seattle, where he received his B.S. degree in 1941. He

entered the U.S. Coast Guard Reserve and graduated as an Ensign, in 1943, from the Officer Candidate Class at the Coast Guard Academy, in the upper 10 percent of a class of 300. After service in the Coast Guard, he returned to the University of Washington for graduate study. In 1948 he took a position with a marine geology research group at the U.S. Navy Electronics Laboratory, San Diego, California, where he served the nation well until his death. The only interruption to this scientific career was a period of active duty in the Coast Guard during the Korean War; at his death he held the rank of Commander (Retired) in the Coast Guard Reserve.

Carl Shipek's major contributions to geology of the sea floor were in the field of underwater photography. He became an internationally recognized authority in the development of deep-sea cameras, their use at sea, and subsequent study of photographs of the sea floor. In the early days of deep-sea photography, the researcher had to build his own cameras and attendant equipment. Carl was an excellent machinist, and through personal study became expert in camera construction. This construction also required acquisition of special skills in the fields of mechanical, electrical, and electronic engineering.

Throughout his career, Carl was deeply involved in the improvements of underwater cameras as well as water and sediment sampling equipment. He soon perceived the need to take stereo views of the sea floor, and developed a unique 70 mm stereo camera with electronic flash equipment, with which he took hundreds of black and white and colored pictures of the sea floor on a number of major expeditions in the Pacific and Indian Oceans.

While studying his sea-floor pictures, Carl realized the need to apply the techniques of photogrammetry to his stereo pairs. Through several years of study he made significant progress in this field. He was honored with the Bausch and Lomb Photogrammetric Award of the American Society of Photogrammetry at the University of Illinois in 1966. His expertise in the field of underwater photography was also recognized in the Marine Technological Society, where he served on Underwater Photography and Biology Commit-

As a result of his experience in the Coast Guard, and by making numerous expeditions on oceanographic research vessels, Carl Shipek was outstanding in those aspects of seamanship involved in deep lowerings of heavy equipment at sea. He was generous in advising and aiding others in these matters.

Carl Shipek was not a man who devoted his whole interest to his personal career. He was active in church work, in the programs of the Boy Scouts of America, and in carpentry, gardening, and landscaping. Carl's wife Florence is a professional anthropologist who, through the years, has made major contributions to improving the living conditions of certain American Indians in Southern California, and to some now living in Mexico. Carl strongly supported and aided her in these efforts.

Carl Shipek's friends and colleagues sorely miss his outstanding professional skills, his friendly advice, and his companionship.

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