

# ROCK STARS

## Francis Parker Shepard, 1897–1985

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Francis Parker Shepard—“Fran” to his colleagues and students—was not of humble beginnings, but was the son of a moderately wealthy family of Peaches Point, Marblehead, Massachusetts, where he attended mainly private schools. At 14, he took his first trip to Europe and discovered a love for mountains, even though he broke his leg on his first venture into the Dolomites. Discovering this fascination with mountains was certainly an early influence in his life and career. Another influence—the fact that his father owned a rather large and comfortable yacht—undoubtedly led to his turning to marine geology.

Shepard’s career in geology had two periods: structural geology and mountains, and marine geology (he called it submarine geology). But throughout both careers, he showed the same characteristics. He was an observer who interpreted what he observed. He was skeptical of theoretical analyses and preferred to overwhelm his opposition with extensive collection of data. He was efficient, hardworking, and prolific: He published more than 200 papers and authored or co-authored ten books. And he loved to challenge and upset cherished dogma. In the second and greater of two careers, Shepard was frequently called the Father of Marine Geology. In a wonderful story about his first meeting with the venerable Madame Klenova of the USSR Institute of Oceanography in 1956, she remarked warmly, “You are the father of marine geology, and I am the mother of marine geology.” To this, Elizabeth, Shepard’s lovely wife for well over 50 years, replied, “And that, in turn, must make me the concubine.”

Shepard described himself as a poor student, but he earned his degree in geology at Harvard in about two and a half years, before and after serving briefly



Francis Parker Shepard ca. 1920 as a navy cadet at Harvard with his future bride, Elizabeth Buchner.

in the Navy during the First World War. R.A. Daly, J.B. Woodward, and Charles Palache were among his influential professors. Also while at Harvard, he met one of his sister’s friends from Vassar, Elizabeth Buchner. When selecting a graduate school, he was influenced by the fact that Elizabeth lived in Milwaukee, and he decided on the University of Chicago. There, he fell under the influence of R.D. Salisbury, J. Harlan Bretz, and Rollin T. Chamberlin, son of T.C. Chamberlin. During his three years at Chicago, immediately after T.C. Chamberlin’s retirement, students and colleagues took Chamberlin’s ideas almost as a religion, and the general attitude was that most of the important problems in geology had been solved. Shepard was challenged to prove otherwise.

R.C. Chamberlin was working in the Rocky Mountains, so Shepard took up the study of structural geology, and did his

dissertation on the Rocky Mountain Trench. He and Elizabeth spent their honeymoon in the field, camping in a pup tent for three months. They had no car, so they traveled by train from area to area, packing with them Elizabeth’s wardrobe trunk with her trousseau. The trunk sat unopened at each railway station during the three-month trip, while the couple traveled with two duffel bags in ranchers’ cars, by horseback, by wheelbarrow, and by backpacking. Elizabeth, who helped keep records organized, was always a true partner in Shepard’s research, from that first adventure to the cruises I took with the two of them many years later.

Shepard received his Ph.D. in 1922 and became an instructor at the University of Illinois. His interest in structural geology and tectonics continued, and he published his first 11 papers on the subject. As a young graduate student, I remember reading his 1923 paper “To question the theory of periodic diastrophism.” I did not realize it at the time, but this was the start of his lifelong love of challenging recognized authority in geology. Only a year after receiving his Ph.D., he was questioning the ideas of T.C. Chamberlin, R.T. Chamberlin, Charles Schuchert, Bailey Willis, and others.

Shepard’s father, the head of Shepard Steamship Line, was an avid sailor, and when Elizabeth was expecting her first child in 1923, he offered his son the use of his yacht that summer so he could do “some kind of geological work,” rather than field work in the mountains. This was to be the start of the second phase of his career. The story has become legend in marine geology that he took surface sediment samples from the continental shelf off the New England coast and did not find what theory had predicted. Some of the coarsest sediments do not lie near the shore, but near the shelf edge. After several more summers in Marblehead broadening his survey area, and after considerable study of the notations on published navigation charts, he published a 1927 abstract, “Influence of oscillating sea level on the development of the continental shelf,” to be followed by his classic 1932 paper, “Sediments of the continental shelves.” This was the first study of the subject documented with observations and interpretations. He also challenged existing ideas, proposing a glacial origin of some of the trough-shaped valleys off the northeastern Canadian coast and a lowered sea level–river erosion origin of other submarine valleys.

Shepard was now well into the second and more important stage of his career: that of a submarine geologist. The ready availability of ship time was certainly a contributing factor in this change. His interests broadened through increasing study of published charts. He was given a grant from the University of Illinois to obtain charts from all over the world. As he published papers on submarine canyons, submerged deltas, sea-level changes, and continental shelves, he was able to back up observations from his study area with global observations from these charts. And he continued to challenge authority by rejecting some of the ideas on coast classification of the eminent coastal geomorphologist, Douglas Johnson. Also during this period, he developed a mutually beneficial relationship with the U.S. Coast and Geodetic Survey, and worked with the captains of several of its vessels off other U.S. coasts.

Shepard started working on California submarine canyons during a sabbatical leave in 1933. In 1936, he made another major career change. In that year, Charles Palache, his former professor at Harvard, became the president of the Geological Society of America. He changed the GSA policy of making only small research grants and recommended that Shepard apply for a "very large" grant of \$10,000. T. Wayland Vaughn (see "Rock Stars," *GSA Today*, November 1995, v. 5, p. 233–234), then the director of the Scripps Institution of Oceanography, encouraged Shepard to use the institution's new ship, the 96-foot *E. W. Scripps*, for his research on canyons of the California continental margin. So, in 1937, he took a leave from the University of Illinois, and brought his family and two of his promising graduate students—Robert S. Dietz, who arrived by hitchhiking, and K.O. Emery, who rode boxcars—to La Jolla. For the \$10,000, Shepard had six months ship time and paid his two assistants, who developed and built the necessary equipment. He continued teaching at the University of Illinois, but now also had a formal relationship with Scripps.

Shortly after the bombing of Pearl Harbor, Shepard moved to La Jolla to join the University of California Division of War Research. During the war, he compiled continental-shelf sediment charts for use in submarine warfare and conducted harbor approach studies in California, Hawaii, and Midway. After the war, he resigned from Illinois and accepted a permanent appointment at Scripps, where he spent the rest of his distinguished career.

Many geologists know Shepard's subsequent career from his many papers and books. His first text, *Submarine Geology*, was a standard for the subject for many years after publication of the first edition in 1948. He completed publication of his prewar surveys of California submarine canyons and the Gulf of California, and he continued his work on submarine canyons

and coastal processes and classification. From 1951 to 1960, he was in charge of the American Petroleum Institute study (API Project 51) of the coastal, deltaic, and continental-shelf areas of the northwest Gulf of Mexico. The study produced a remarkable collection of papers by Shepard, his students, and his colleagues, compiled in a summary volume in 1960.

After leading the API Project 51, Shepard once again returned to his earlier interests: submarine canyons, coastal processes and features, and sea-level changes. By this time, his international recognition started bringing him awards and honors. He was an honorary member and president of international geological societies, received two honorary doctorates, and received the Wollaston Medal from the Geological Society of London and the

Sorby Medal from the International Association of Sedimentologists. Each year, the Society for Sedimentary Geology awards one of its major medals, the Francis P. Shepard Medal, for excellence in marine geology.

Shepard conveyed his enthusiasm to all those around him and to two generations of graduate students over his long years of teaching. To them and to his colleagues and associates, he was an ever kind and generous friend. His manner was gentle, even courtly. He continued to work long after his formal retirement in 1966, spending at least a part of every weekday in his office, until frailty and illness made his visits less frequent. Even then, he continued working at home, literally until the day before his death.



Francis Parker Shepard in 1937 with a model of one of the submarine canyons he had surveyed.

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have also drawn extensively from Shepard's unpublished autobiography.

#### Further Reading

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