

Frances Lawrence Parker Biography

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Frances Lawrence Parker on the Glomar Challenger, circa 1962

Frances Lawrence Parker was born in Brookline, Massachusetts on March 28, 1906, the youngest child of Philip Stanley Parker, a judge, and Eleanor Payson Parker. She received an A.B. degree from Vassar College in 1928 with a major in

geology and a minor in chemistry. While at Vassar she went on two geological field trips in 1926 and 1928 to Wyoming led by geologist Thomas McDougall Hills. Parker received an M.S. in geology from the Massachusetts Institute of Technology in 1930.

While at MIT, Parker took a course with Joseph Cushman, the preeminent micropaleontologist, and became his research assistant at the Cushman Laboratory in Sharon, Massachusetts. Cushman studied foraminifera with funding from the U.S. Geological Survey. Parker took and passed the USGS examination, she was appointed Assistant Scientist (Paleontologist) and her salary at Cushman's laboratory was paid by the Survey. Parker worked with a number of students and assistants at Cushman's laboratory, including Fred B. Phleger. In 1932, Cushman and Parker traveled to central Europe where they examined type specimens and visited scientists, museums and laboratories engaged in research on micropaleontology in Germany, Austria, Czechoslovakia and Hungary. During her years with Cushman, Parker spent summers doing research at the Woods Hole Oceanographic Institution (WHOI) between 1936 and 1940. She and Fred Phleger shared a laboratory at WHOI. Cushman and Parker published sixteen papers together between 1930 and 1940.

Foraminifera are microscopic marine protozoa that secrete a calcareous or arenaceous shell. They live in all marine environments and are both planktonic and benthonic. Foraminifera live both on the bottom and floating in the water column, and they presently inhabit the marine environment from 0 to 5000 meters depth. Upon death the shells accumulate in the sediments on the ocean floor. Scientists use these remains as a record, which enables them to learn about marine environments over a long timescale. Foraminifera are used in geology and by the oil industry as invaluable aids in the determination of the age as well as the depositional environment of strata.

From 1940 to 1943, Parker worked as a secretary at Foxcroft, an exclusive girl's school in Middleburg, Virginia. In 1943, she received several offers to work as a scientist in the petroleum industry and accepted a position at Shell Oil Company. Parker recalls that her interest in ecology began in Houston, and that the Shell Oil Company group with which she worked broadened her interests from foraminifera taxonomy to the application of the tools of micropaleontology to studies of the environment.

There is a natural connection between foraminifera research and the petroleum industry. Petroleum is generated by heating organic matter deposited within marine sediments. Some such sediments are particularly rich in organic matter and make good source rocks. Foraminifera in the layers above and below these layers help constrain the age of the source rocks, and foraminifera within the source rocks indicate the environment of deposition. This information helps in exploration for undiscovered petroleum deposits. Consequently petroleum companies have long been interested in and have supported work in this field, especially during periods when petroleum exploration was very active.

Parker was appointed Senior Paleontologist at Shell Oil Company in 1943, but left the company after three years when she became ill with tuberculosis. While she was recuperating in Boston in 1947, she received a job offer from Fred Phleger who was on the faculty at Amherst College and spent summers at WHOI. He had a small research grant from WHOI, and Parker joined him to undertake work on foraminifera taxonomy, working largely on foraminifera of the Atlantic.

Phleger and Parker worked together at Amherst College in 1947 and continued at WHOI in 1949. While most of Parker's earlier work was on benthic foraminifera of the Atlantic, she published a series of studies on foraminifera from the Gulf of Mexico beginning in 1950. She also did important work on micropaleontology of the Mediterranean working from deep-sea cores collected during the Swedish Deep Sea Expedition.

Phleger, a native Californian, decided to move west in 1950. The Scripps Institution of Oceanography (SIO) in La Jolla, California offered positions to Phleger and Parker, and in 1950 they established the Marine Foraminifera Laboratory at SIO. The laboratory was initially supported by grant funds from the American Petroleum Institute, but later was substantially funded by the Office of Naval Research and the National Science Foundation. Several other scientists were affiliated with the laboratory, including William R. Riedel, a young Australian paleontologist who arrived at SIO in 1951. Like Parker, Riedel had worked on cores collected on the Swedish Deep Sea Expedition.

Parker was appointed Associate in Marine Geology at SIO in December 1950. Her job title was changed to Junior Research Geologist in April 1952 and to Assistant Research Geologist in July 1952. She was advanced to Associate Research Geologist in July 1960, Research Paleontologist in July 1967 and Research

Paleontologist II in July 1970. She retired from SIO in July 1973, but continued to work in the laboratory daily for another decade.

Parker's years at SIO were prolific. She published over 30 papers as author and as co-author with Phleger and other SIO colleagues, and she edited the Contributions from the Cushman Foundation for Foraminiferal Research from 1956-1963. Parker conducted research on all aspects of foraminifera: taxonomy, stratigraphy, biogeography, ecology, sedimentology and paleoenvironment, and many of her publications on benthic and planktonic foraminifera are regarded as classics. Her work on planktonic foraminifera, which began in 1960, is judged particularly important. She developed a new high-level classification, down to the genus level, based on the absence and presence of spines on the shells of the planktonic foraminifera. This wall-texture approach to taxonomy is now generally accepted as the basis for classification for all Cenozoic plankton foraminifera.

Micropaleontology in general, and Parker's work on foraminifera stratigraphy specifically, were important to the Deep Sea Drilling Project (DSDP), a NSF project with headquarters at the Scripps Institution of Oceanography beginning in 1967. DSDP collected cores of ocean bottom sediments around the world. William Riedel was an active participant in DSDP and went out on several DSDP cruises. Parker went to sea only once, on a cruise of the DSDP drilling vessel GLOMAR CHALLENGER late in her career.

The U.S. Geological Survey named a bank on the Louisiana shelf Parker Bank in honor of Frances Parker. She received the Joseph A. Cushman Award for Outstanding Achievement in Foraminiferal Research in 1981. She was a fellow of the Cushman Foundation for Foraminiferal Research and the Geological Society of America. In 1999, Frances Parker established the Frances Parker Program in Public Education in the Earth Sciences at the Scripps Institution of Oceanography, UCSD.

References:

Vincent, Edith. "The 1981 Joseph A. Cushman Award Frances L. Parker." *Journal of Foraminiferal Research* 12 (1982), 93-95.