

Robert Sinclair Dietz Biography



Robert Sinclair Dietz was born in Westfield, New Jersey, September 14, 1914, a son of civil engineer Louis Dietz and Bertha Dietz. He was educated at the University of Illinois from 1933- 1941 where he received B.S., M.S. and Ph.D. degrees in geology with a minor in chemistry. He joined ROTC his junior year. While Dietz's degrees were from the University of Illinois, most of his doctoral work was done at the Scripps Institution of Oceanography (SIO) under the direction of his mentor, Francis P. Shepard, who had faculty positions at both institutions before the war. While a student in Illinois, Dietz became interested in the Kentland structure in

Indiana and identified it as a meteoric impact site. He wanted to write his dissertation on Kentland, but his professors steered him toward marine geology. Dietz and his fellow graduate student K.O. Emery together with Francis P. Shepard first described the submarine phosphorites off California.

Dietz was unable to obtain employment as a marine geologist after receiving his doctorate, as this field was not yet recognized. He was called to active duty as a ground officer in the U.S. Army Air Corps with the 91st Observation Squadron in Fort Lewis, Washington, and served as a pilot with many missions in South America. He became fluent in Spanish and developed an interest in the Andes. After World War II, he remained in the reserves for an additional fifteen years and retired as a lieutenant colonel.

After his wartime military service, Dietz received a letter from Dr. Eugene LaFond, a colleague he had met at Scripps, asking him to organize a sea-floor studies group at the Naval Electronics Laboratory (NEL) in San Diego. Dietz accepted and became the founder and director of the Sea Floor Studies Section of NEL. This position included an opportunity to be a geological oceanographer on Admiral Richard E. Byrd's last expedition to Antarctica, the navy-sponsored Operation HIGHJUMP. While at NEL, Dietz participated in several joint NEL-SIO oceanographic cruises to explore the Pacific basin, notably MidPac in 1950. H. William Menard and Dietz delineated the Cape Mendocino submarine scarp on MidPac; Menard later described its fracture zone as a type locality. Working with Robert Dill, they made the first map of the deep sea fan at the mouth of Monterey Submarine Canyon that showed large amounts of sediments channeled into the deep sea from the continent.

Dietz's laboratory purchased the first Canadian "aqua-lungs" invented by Emile Gagnan and Jacques Cousteau, and NEL Sea Floor Studies Section scientists became proficient in their use. In 1953 the group together with several members of the SIO staff formed a private consulting firm called Geological Diving Consultants. GDC was hired by major oil companies interested in initiating oil exploration off the central California coast. GDC's seafloor geological maps were used in the discovery of two major oil fields off Santa Barbara and Point Conception. Dietz contributed directly by making hundreds of dives along the California and Baja California coasts.

Dietz, SIO diving officers Conrad Limbaugh and James Stewart, Robert Dill, Francis Shepard and others at NEL/SIO made ten cruises to the Gulf of California, mapping and diving at the heads of submarine canyons. They filmed underwater footage and made still photographs of the geological processes in canyon heads. This work contributed to publications including Shepard and Dill's, *Submarine Canyons and other Valleys of the Sea Floor*, the Marine Geology chapter in Shepard's book, *Submarine Geology*, and van Andel and Shor, eds. *Marine Geology of the Gulf of California*. Dietz's experiences as a scuba diver increased his awareness of the value of in situ studies and the potential value of submersibles as a scientific tool.

Dietz served as an adjunct professor at the Scripps Institution of Oceanography from 1950-1963, coincident with his service at the Naval Electronics Laboratory, 1946-1963. At his home at La Jolla Shores he hosted discussions among marine geologists and graduate students. These years in California were interrupted in 1953 when Dietz served as a Fullbright Scholar at the University of Tokyo, and again from 1954-1958 when he served with the Office of Naval Research (ONR) in London. His fellowship in Japan enabled him to study trans-Pacific transmission of underwater sound from the 1952 Myojin-sho eruption and to become familiar with Japanese Hydrographic Office studies of the submarine geology of the Northwest Pacific basin. He became interested in and named the Emperor chain of seamounts that extended from the northwest end of the Hawaiian Island-Midway chain and speculated over lunch with Robert Fisher in 1953 that something must be carrying these old volcanic mountains northward like a conveyor belt.

The papers he published during this period, combined with the work of others, posed some of the fundamental questions connected with plate tectonic theory. Dietz became an early and convincing proponent of continental drift, and he wrote incisive papers contributing to the concept he called sea-floor spreading.

While stationed in London, Dietz met Jacques Piccard through Jacques Cousteau. Dietz knew of Piccard's design for the French submersible FNRS-3, and he offered to promote ONR support for the construction of the bathyscaph TRIESTE. This was successful, and TRIESTE was tested in sea trials off Capri. Piccard, Dietz, and Dr. Andreas Rechnitzer of NEL formulated a plan for a TRIESTE manned deep dive into the western Pacific trench to prove the utility of the bathyscaph as a research tool for NEL. On January 23, 1960, Piccard, accompanied by Lt. Donald Walsh, USN, made the deepest dive, 35,800 feet, almost seven miles to the seafloor in the Challenger Deep, a location southwest of Guam surveyed by SIO geologist Robert Fisher as the deepest ocean trench in the world. Dietz and Piccard coauthored a book describing this feat entitled, *Seven Miles Down: The Story of the Bathyscaph TRIESTE*. (New York: Putnam, 1961).

In 1963, Dietz was asked by Dr. Harris B. Stewart to join and expand the oceanographic and geological studies group within the U.S. Coast and Geodetic Survey in Washington, DC. These were the post-Sputnik years when American oceanographers were pushing to develop a "wet NASA" to focus attention on oceanography "inner space." The Survey moved its research offices to Miami where it became the Environmental Sciences Administration (ESSA). ESSA was absorbed into the National Oceanic and Atmospheric Administration (NOAA) when it was created. Dietz was instrumental in forming a team of marine biologists and geophysicists within NOAA similar to the Sea Floor Studies Group at NEL. Dietz presented papers to scientists and to the public to publicize NOAA studies and developments in plate tectonics. These papers often included the cartoons of his NOAA colleague John Holden. Changes in governmental priorities de-emphasized geology and geophysics within NOAA just as Dietz reached retirement age in 1975.

After leaving NOAA, Dietz accepted positions as a visiting professor at the University of Illinois in 1974, Washington State University, 1975-1976, and Washington University, St. Louis, in 1976- 1977. In 1977, he accepted a tenured faculty position at Arizona State University and became emeritus faculty in 1985, although he continued research and publication until his death.

Dietz traveled extensively during his career, and he had a gift for finding adventure. During the height of the cold war, he visited and photographed Russian oceanographic laboratories. In 1968, Dietz was attending an international geophysical conference in Prague when Soviet tanks crossed the border and challenged Czechoslovakian President Ludvik Svoboda and party leader Alexander Dubcek. Dietz put his camera in a paper bag and went out to the streets of the city to photograph events. He was writing "Viva La Revolution" with chalk on a Soviet tank when a group of men dragged him into an alleyway where several bodies lay. He thought they were Russians. They were Czechs who wanted him to photograph the bodies for the international press. Dietz observed and photographed Molotov cocktails being tossed at Soviet tanks. Eventually, the foreign conferees were instructed to leave the country. Several of Dietz's photographs were published in a Life Magazine article on the incident (v. 65, no. 10, September 6, 1968, p. 56 et. seq).

Dietz traveled widely in the American west and was appointed chief scientific consultant for the Barringer Crater Company, owners of Meteor Crater, because of his expertise in meteoric impacts. He was a popular teacher and led many field trips for his introductory courses to the Grand Canyon and other points of geological interest. After his retirement, he became interested in the publications of creation scientists and their assertions that the Grand Canyon was much younger than suggested by geologists, created on a time scale consistent with biblical texts. He attended creationist science conferences, corresponded with conference speakers, and visited exhibits representing their point of view. Dietz collaborated with scientific illustrator John C. Holden on a book entitled *Creation/Evolution Satiricon: Creationism Bashed* (Winthrop, WA: Bookmaker, 1987), which refuted creationist views of earth history.

Throughout his career, Robert Sinclair Dietz made many significant contributions in the fields of geology, marine geomorphology, and oceanography. Edwin Hamilton, one of the first geologists he recruited at NEL, noted that in geomorphology, Dietz contributed original work in geomorphic evolution of the continental terrace, in the origin of continental slopes and margins, in the development of the Hawaiian swell, and in the development of the abrupt change in slope at the continental margins. He contributed broadly to knowledge of

the geomorphology of the northwest Pacific and the Arctic basin. Dietz contributed to an understanding of turbidity-current channels, and sedimentation in the continental terrace and in the deep Pacific.

Dietz was well known for his advocacy of continental drift and for the term "sea-floor spreading," which he coined. Dietz was interested in lunar craters as a graduate student and returned to the interest during the last years of his professional career. He achieved prominence by studying meteorite craters, both on Earth and on the moon, and arguing that these impact craters were common. He long argued, in opposition to economic geologists, that the nickel-iron rich deposit of Sudbury Basin in Ontario, Canada, resulted from a meteoric impact. He used shatter coning to identify impact sites including the Ries and Steinheim basins in Germany (1958) and the Vredefort Ring in South Africa (1961). He coined the phrase "astrobleme" to describe impact structures created by high energy extraterrestrial objects striking the earth. He lived long enough to see most of his findings, called iconoclastic by his colleagues in the 1950s and 1960s, confirmed. In the 1988 presentation of the Penrose Medal to Dietz, Troy L. Pewe noted:

“It is not too bold to assert that Dietz's contribution to our understanding of the process of meteoritic impact and to widespread occurrence of impact structures on Earth has contributed significantly to the awakening of the geologic community to the importance of catastrophic events in Earth's history, even their possible detrimental impact on certain life forms.”

Robert Sinclair Dietz was a very independent thinker characterized by his colleagues as one of the foremost geologists of his generation, and characterized by historians as one of the modern proponents of catastrophism. He called himself an astrogeologist. Dietz enjoyed discussion of new ideas. He often recognized the significance and implications of discoveries made by others earlier than the discoverers themselves, and he urged his students and colleagues to write about their discoveries in the widest context of geology.

Dietz received many distinguished honors during his career; among these were the Walter H. Bucher Medal of the American Geophysical Union, the Gold Medal of the Department of Commerce, the Alexander von Humboldt Prize (West Germany), and the Penrose Medal of the Geological Society of America.

Robert Sinclair Dietz died of a heart attack on Friday, May 19, 1995, at his home in Tempe, Arizona.

References:

Dietz, Robert S. "Earth, Sea, and Sky: Life and Times of a Journeyman Geologist." *Annual Review of Earth and Planetary Science* 22 (1994), 1-32.

"Dietz, Robert Sinclair." *McGraw-Hill Modern Scientists and Engineers*, v. 1 (1980), 290-291.

