

19.2 Harry Hess

Harry Hammond Hess was a geology professor at Princeton University and served many years in the U.S. Navy. In 1962, Hess published a landmark paper that described his theory of sea floor spreading. Hess also made major contributions to our national space program.

A globe-trotting geologist



Courtesy Archives of Department of Geosciences, Princeton University

Harry Hammond Hess was born in New York City on May 24, 1906. He first studied electrical engineering at Yale University, but later changed his major to geology. He received his degree in 1927.

After graduation, Hess worked for two years as a mineral prospector in southern Rhodesia (currently Zimbabwe, Africa). He then returned to the United States to study at Princeton University. In 1932, Hess became a professor of geology at Princeton. Years later, his geological research took him to the far depths of the Pacific Ocean floor.

The Navy commander

Harry Hess was part of the Naval Reserve. In 1941 he was called to active duty. His first duty during World War II was in New York City where he tracked enemy positions in the North Atlantic. He later commanded an attack transport ship in the Pacific.

Although he was a Naval commander, Hess seized the opportunity of being on a ship to further his geological research. Between battles, Hess and his crew gathered data about the structure of the ocean floor using the ship's sounding equipment. They recorded thousands of miles worth of depth recordings.

In 1945, Hess measured the deepest point of the ocean ever recorded—nearly 7 miles deep. He also discovered hundreds of flat-topped mountains lining the Pacific Ocean floor. He named these unusual mountains “guyouts” (after his first geology professor at Princeton).

A ground breaking theory

After the war, Hess continued to study guyouts, midocean ridges, and minerals. In 1959, his research led him to propose the ground breaking theory of sea

floor spreading. At first, Hess' idea was met with some resistance because little information was available to test this concept.

In 1962, his sea floor spreading theory was published in a paper titled “History of Ocean Basins.” Hess explained that sea floor spreading occurs when molten rock (or magma) oozes up from inside the Earth along the mid-oceanic ridges. This magma creates new sea floor that spreads away from the ridge and eventually sinks into the deep oceanic trenches where it is destroyed. Hess' theory became one of the most important contributions to the study of plate tectonics.

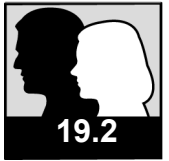
The sea floor spreading theory explained many unsolved geological questions. Most geologists at the time believed that the oceans had existed for at least 4 billion years. But they wondered why there wasn't more sediment deposited on the ocean floor after such a long time period.

Hess explained that the ocean floor is continually being recycled and that sediment has been accumulating for no more than 300 million years. This is about the time period needed for the ocean floor to spread from the ridge crest to the trenches. Hess's theory helped geologists understand why the oldest fossils found on the sea floor are 180 million years old at most, while marine fossils found on land may be much older.

From the ocean to the moon

Harry Hess also played a key role in developing our country's space program. In 1962, President John F. Kennedy appointed Hess as Chairman of the Space Science Board—a NASA advisory group. During the late 1960s, Hess helped plan the first landing of humans on the moon. He was part of a committee assigned to analyze rock samples brought back by the Apollo 11 crew.

Harry Hess died in August 1969, only one month after the successful Apollo 11 lunar mission. He was buried in the Arlington National Cemetery. After his death, he was awarded NASA's Distinguished Public Service Award.



Reading reflection

1. How did Harry Hess' career in the Navy contribute to his geological research?
2. What were some of the geological discoveries Hess made while aboard his attack transport ship?
3. Describe Hess' theory of sea floor spreading.
4. How did Hess' sea floor spreading theory explain why so little sediment is deposited on the ocean floor?
5. What were Hess' contributions to space research?
6. **Research:** Harry Hess made significant contributions in the fields of geology, geophysics, and mineralogy. What scientific society established the Harry H. Hess Medal and what achievements does it recognize?