

Paleomagnetism

Study of the record of the Earth's magnetic field in rocks, sediment, or archeological materials

Rocks record Earth's magnetic field when they are formed

PALEOMAGNETISM
TRAILHEAD



Marie Tharp

Marie Tharp discovered Mid-Oceanic Ridges in her bathymetric studies of the Atlantic Ocean in 1957. Because of her gender she was not allowed to sail on scientific cruises until 1968.

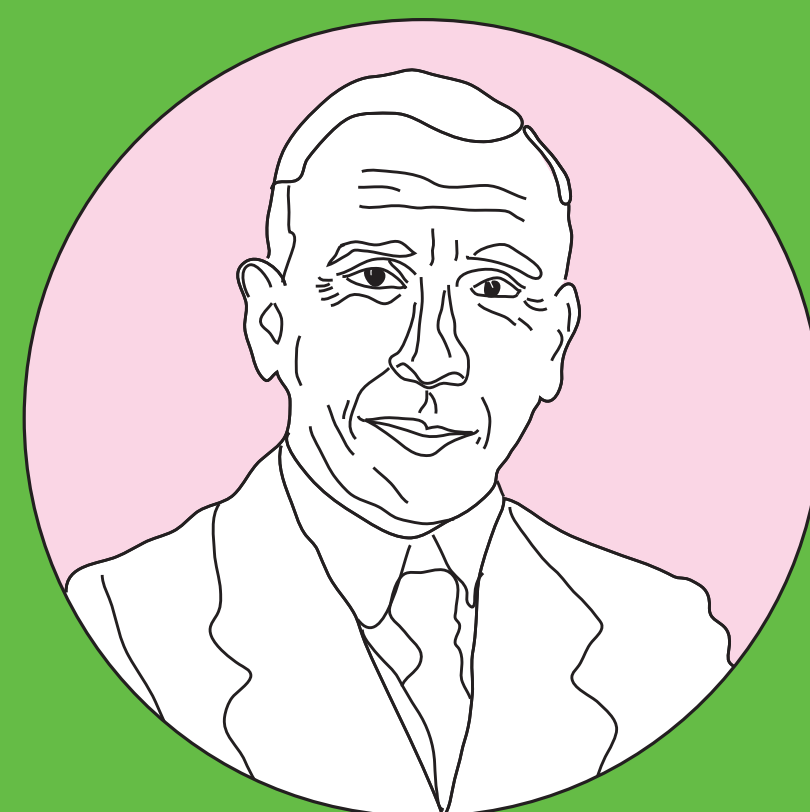


Harry Hess

Harry Hess proposed the theory of ocean seafloor spreading in 1960. He hypothesized that new oceanic seabed forms at Mid-Oceanic Ridges and laterally moves away.

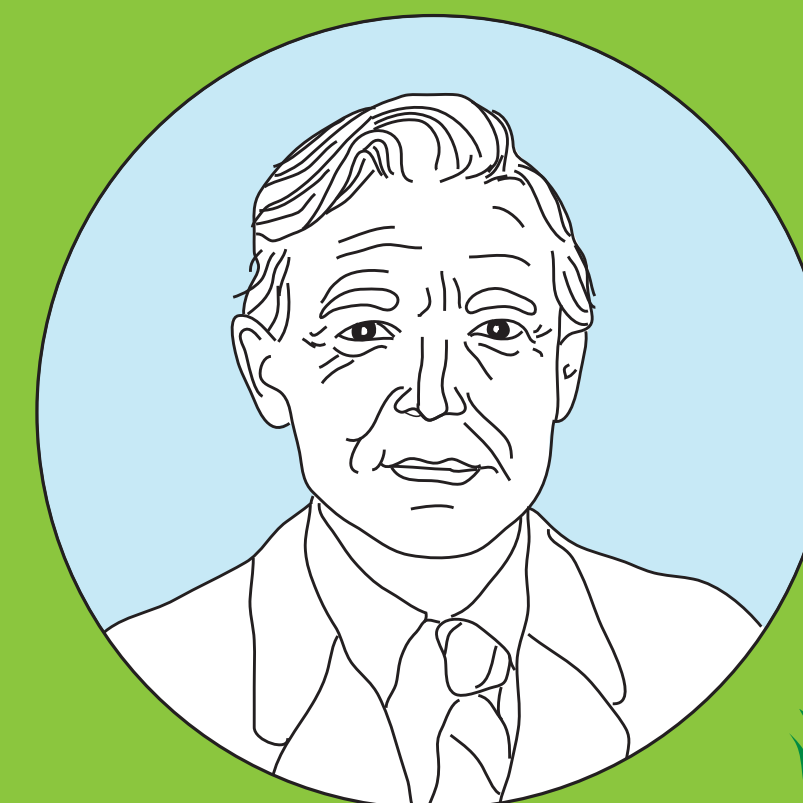


Alfred Wegener proposed the continental drift hypothesis in 1912. At that time his ideas were rejected by the scientific community. He never witnessed the impact of his ideas as he passed away during an expedition to Greenland in 1930.

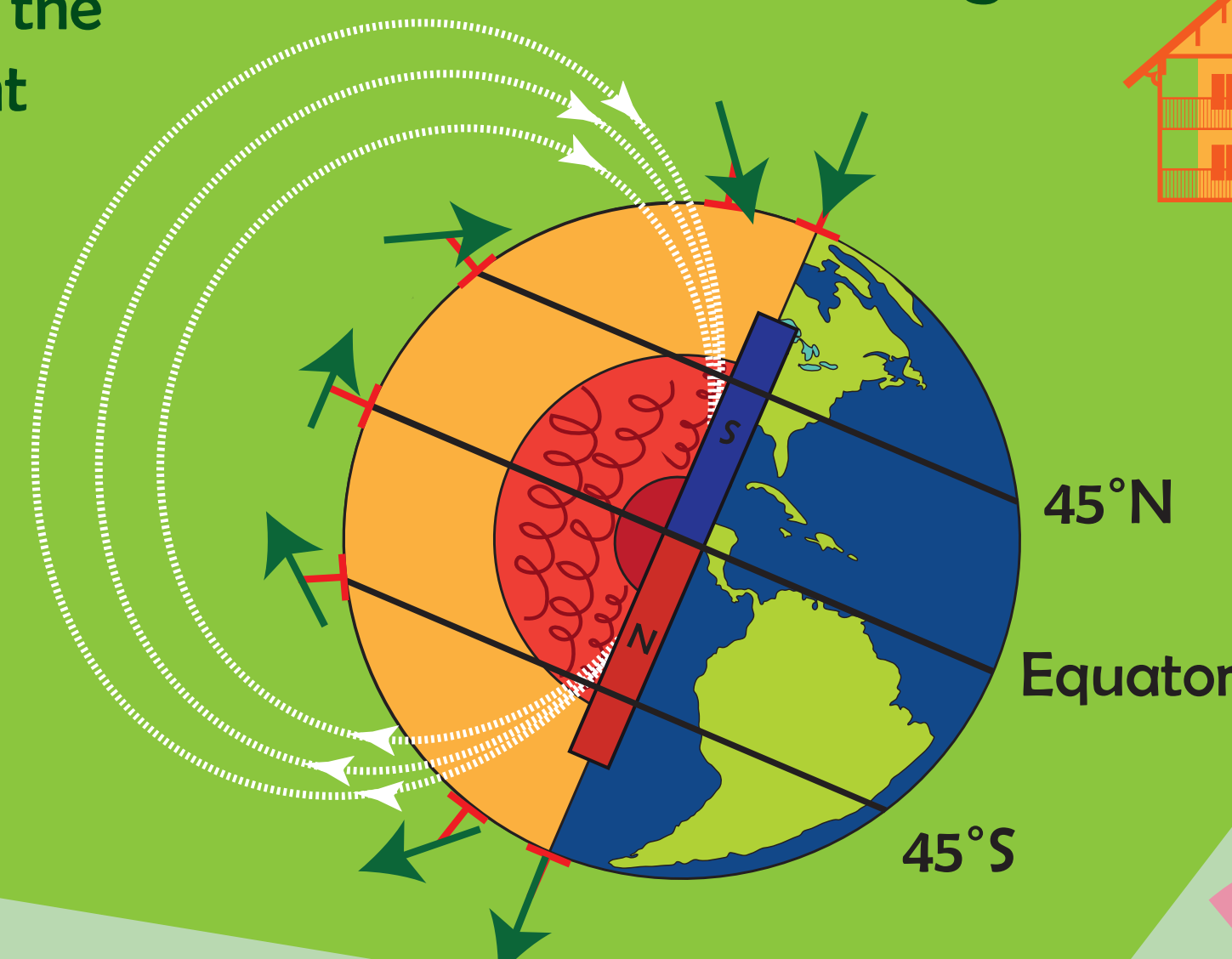


Alfred Wegener

Edward Irving studied the paleomagnetism of rocks in Scotland and India and concluded that these terrains moved with respect to the current geomagnetic pole by looking at the magnetic inclination. His ideas were so revolutionary at the time that he initially failed his PhD degree. Irving's and Runcorn's findings enabled the rapid development of the study of **Plate tectonics** from the 1960s onward.



Edward Irving



Frederick Vine & Drummond Matthews



Lawrence Morley

Lawrence Morley and Frederick Vine independently realized that the seafloor should show symmetric patterns of magnetic polarity reversals on both sides of the Mid-Oceanic Ridges, but both their manuscripts were rejected. Frederick Vine and Drummond Matthews finally published this idea in 1963. Periods of normal polarity are depicted in black, reversed polarity in white.

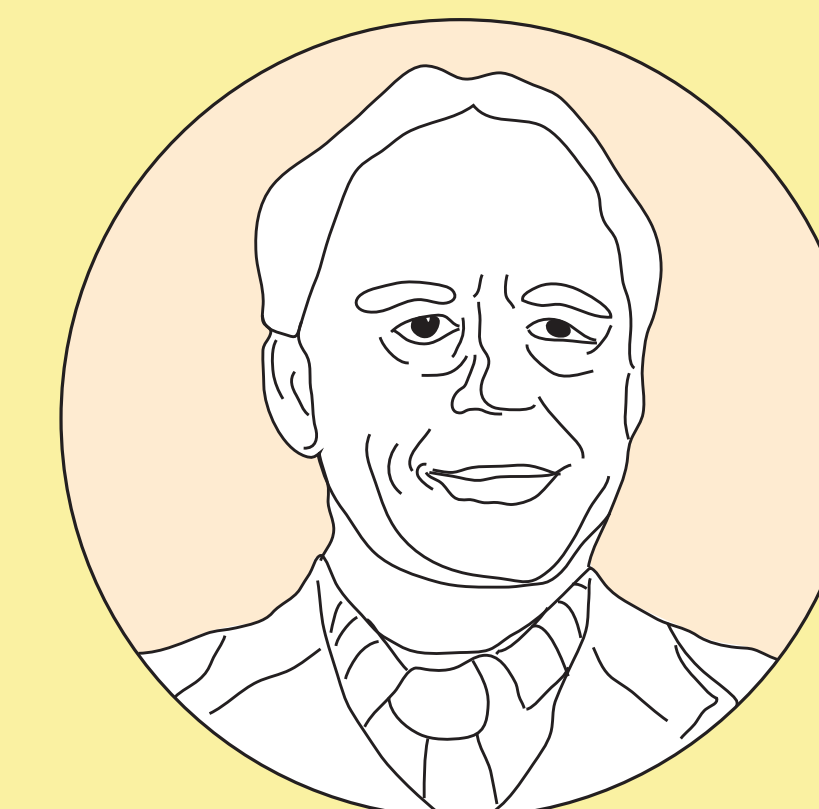


Keith Runcorn

Keith Runcorn used paleomagnetic signals in rocks to reconstruct the relative motions of Europe and America in the 1950s. His efforts provided striking new evidence in favor of Alfred Wegener's continental drift hypotheses that was still controversial at that time.



Reconstruction of the position of the continents 250 million years ago based on paleomagnetism



Alexei Khramov

Alexei Khramov recognised patterns of magnetic polarity reversals in sedimentary rocks and realised that these patterns could be used to correlate geological sections and provide age constraints. He provided the foundation of **magnetostratigraphy**. By 2000, Khramov had supervised and refereed about one third of the entire global data set in paleomagnetism.

