**Hess proposes sea-floor spreading**

Photo: Harry Hess argues that the continents had once been one, and have drifted apart.

With the discovery of plate tectonics and the mapping of the earth into about 12 plates, plus the understanding that plates' movement caused earthquakes, [Alfred Wegener](http://www.pbs.org/wgbh/aso/databank/entries/bowege.html)'s idea of "continental drift" looked less ludicrous than his contemporaries had thought. There still seemed to be no way that continents could plow through the earth's surface on their own, but perhaps something else could explain how the land masses had once been joined.

[Harry Hess](http://www.pbs.org/wgbh/aso/databank/entries/bohess.html) was a geologist and Navy submarine commander during World War II. Part of his mission had been to study the deepest parts of the ocean floor. In 1946 he had discovered that hundreds of flat-topped mountains, perhaps sunken islands, shape the Pacific floor. He named these mountains “guyots” in honor of the Swiss founder of the Princeton geology department. The discovery of the [Great Global Rift](http://www.pbs.org/wgbh/aso/databank/entries/do53ri.html) in the 1950s inspired him to look back at his data from years before. After much thought, he proposed in 1960 that the movement of the continents was a result of sea-floor spreading. In 1962, he added a geologic mechanism to account for Wegener's moving continents. It was possible, he said, that molten magma from beneath the earth's crust could ooze up between the plates in the Great Global Rift. As this hot magma cooled in the ocean water, it would expand and push the plates on either side of it -- North and South America to the west and Eurasia and Africa to the east. This way, the Atlantic Ocean would get wider but the coastlines of the landmasses would not change dramatically.

Hess proved Wegener's basic idea right and clarified the mechanism that broke the once-joined continents into the seven with which we are familiar. The continents are attached to the plates and do not move independently of them. But the plates themselves shift and change shape, carrying the continents along.