Alfred Lothar Wegener: Moving continents

Alfred Wegener's greatest contribution to the scientific world was his ability to look at what others saw as unrelated facts and find patterns that fit into a theory. Wegener was one of the first to realize that an understanding of how the Earth works required input and knowledge from all the earth sciences.

Wegener's scientific vision sharpened in 1914 as he was recovering in a military hospital from an injury suffered as a German soldier during World War I. While bed-ridden, he had time to develop an idea he had been thinking about for years. Like others before him, Wegener had been struck by the remarkable fit of the coastlines of South America and Africa. But, unlike the others, to support his theory Wegener sought out many other lines of geologic and fossil evidence that these two continents were once joined together. Wegener was able to fully develop his ideas into the Theory of Continental Drift, detailed in a book titled Die Entstehung der Kontinente und Ozeane (in German, The Origin of Continents and Oceans) published in 1915.

Alfred Lothar Wegener (1880-1930), the originator of the theory of continental drift. (Photograph courtesy of the Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany.)

Wegener received his doctorate degree in astronomy in 1905, but soon became interested in meteorology. During his lifetime, he participated in several meteorologic expeditions to Greenland. Wegener spent much of his adult life defending his theory of continental drift, which was severely attacked from the start and never gained acceptance in his lifetime. Despite overwhelming criticism from most leading geologists, who thought of him as a meteorologist and outsider interfering in their field, Wegener did not back down but worked even harder to strengthen his theory.
A couple of years before his death, Wegener finally achieved one of his lifetime goals to work for a university as a professor. Ironically, shortly after achieving his academic goal, Wegener died on a meteorologic expedition to Greenland. Georgi (a good friend of Wegener) had asked Wegener to coordinate an expedition to establish a winter weather station to study the jet stream (storm track) in the upper atmosphere. Wegener reluctantly agreed. After many delays due to severe weather, Wegener and 14 others set out for the winter station in September of 1930 with 15 sledges and 4,000 pounds of supplies. The extreme cold turned back all but one of the 13 Greenlanders, but Wegener was determined to push on to the station, where he knew the supplies were desperately needed by Georgi and the other researchers. Travelling under frigid conditions, with temperatures as low as minus 54 °C, Wegener reached the station five weeks later. Wanting to return home as soon as possible, he insisted upon starting back to the base camp the very next morning. But he never made it; his body was found the next summer.

Wegener was still an energetic, brilliant researcher when he died at the age of 50. A year before his death, the fourth revised edition (1929) of his classic book was published; in this edition, he had already made the significant observation that shallower oceans were geologically younger. If he had not died in 1930, Wegener would have pounced upon the new data just acquired by the German research vessel Meteor in the late 1920s. These data showed the existence of a central valley along much of the crest of the Mid-Atlantic Ridge. Wegener just possibly might have recognized the shallow Mid-Atlantic Ridge as a geologically young feature resulting from thermal expansion, and the central valley as a rift valley resulting from stretching of the oceanic crust. The stretched, young crust in the middle of the ocean Wegener would have seen this as additional important information. Wegener probably would have been part of the plate-tectonics revolution, if he had lived longer. In any case, many of Wegener's ideas clearly served as important work for the development of the theory of plate tectonics three decades later.