It seems remarkable, but the earth's largest landmasses are moving—about 1 cm a year! The 1960s revolutionized geology as **continental drift** became an accepted theory.

During the Permian period (about 250 million years ago), all of earth's landmasses united into a single continent called Pangaea (figure 1*a*). Soon after, Pangaea began to break up, as the huge crustal plates moved apart. Approximately 200 million years ago, there were two great continents. The northern continent was Laurasia, and the southern continent was Gondwana (figure 1*b*). Seventy million years ago, Gondwana broke apart, followed later by the breakup of Laurasia (figure 1*c*).

Movement of these crustal plates continues today. Their study is known as **plate tectonics.** During these movements, new crustal material is thrust up from the ocean floor along the mid-Atlantic ridge and flows in both directions from that ridge. The mid-Atlantic ridge runs from the Falkland Islands, at its southern end, to Iceland, at its northern end. As the huge crusts move away from each other in the Atlantic, old crustal material sinks back into the earth in deep oceanic trenches in the Pacific Ocean. Earthquakes along the western coast of North America and the eastern coast of Asia are evidence of these movements.

Continental drift has important implications for biogeographers and paleontologists. It explains why some fossils have a worldwide distribution. Land organisms in existence when all continents were united as Pangaea had access to most of the landmasses of the world. This explains why some fossils are similar in all parts of the world, such as the fossils that Charles Darwin found in South America that were very similar to animals living in Africa. Were it not for continental drift, this pattern would be difficult to explain.

Continental drift also explains how differences in organisms may develop. Continental drift created oceanic barriers that separated populations of plants and animals when continents separated. Evolution then proceeded independently in each biogeographical region and resulted in species characteristic of that region.

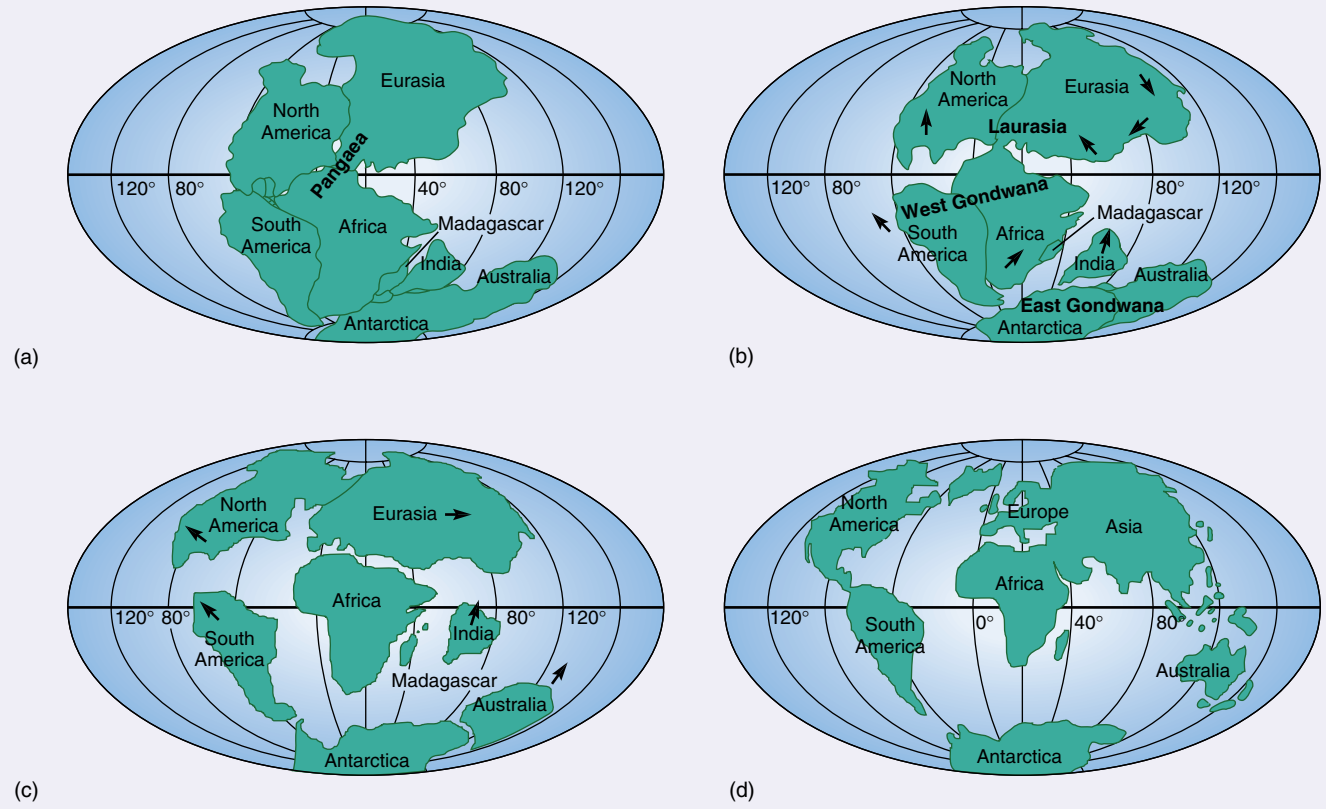

FIGURE 1 **Continental Drift.** (a) About 250 million years ago, the continents of the earth joined in a single landmass that geologists call Pangaea. (b) About 200 million years ago, Pangaea broke into the northern (Laurasia) and southern (Gondwana) continents. (c) This breakup was followed, about 70 million years ago, by the separation of continents in the Southern Hemisphere, and later, by the separation of continents in the Northern Hemisphere. (d) Present position of continents. Note the complementary outlines of the eastern coast of South America and the western coast of Africa. The collision of India with Eurasia (c) formed the Himalaya Mountains. (Miller/Harley: *Zoology*, 5th ed. © The McGraw-Hill Companies.)