g23 Reversing seafloor spreading for the whole world

< Five oceans and the Mediterranean sea >

Reversing seafloor spreading to reconstruct past continents and oceans can be done for the whole world (***Figure g23.1***).[1] The known paleomagnetic reversal history has allowed isochrones to be delineated in maps of the magnetic anomalies in the crustal rocks of deep oceanic areas.[2] Strips of oceanic crust parallel to, and of increasing age away from oceanic ridge segments, have been found. These strips, beginning with the youngest, can be removed and the gap closed. When this is done, some oceans close and, as the world is a sphere of constant surface area, others open. Which? The absence of deepsea trenches between their adjacent coasts means that reversing seafloor spreading closes the Atlantic ocean, the Indian ocean (***Footnote g23.1***), and the Antarctic ocean (which is between Antarctica and the southern tips of South America, Africa, Tasmania, and New Zealand). (*Note*: In referring to the Antarctic ocean, we have reverted for convenience to the pre-Otto Krümmel *Handbuch der Ozeanographie* 1897 concept of five oceans, namely, the Atlantic, the Pacific, the Indian, the Arctic, and the Antarctic.)[3] Reversing seafloor spreading makes greater the Pacific ocean, and opens the Mediterranean sea and a suture line running from it east that passes north of Arabia and India to the Pacific, as the Tethys sea. ❑

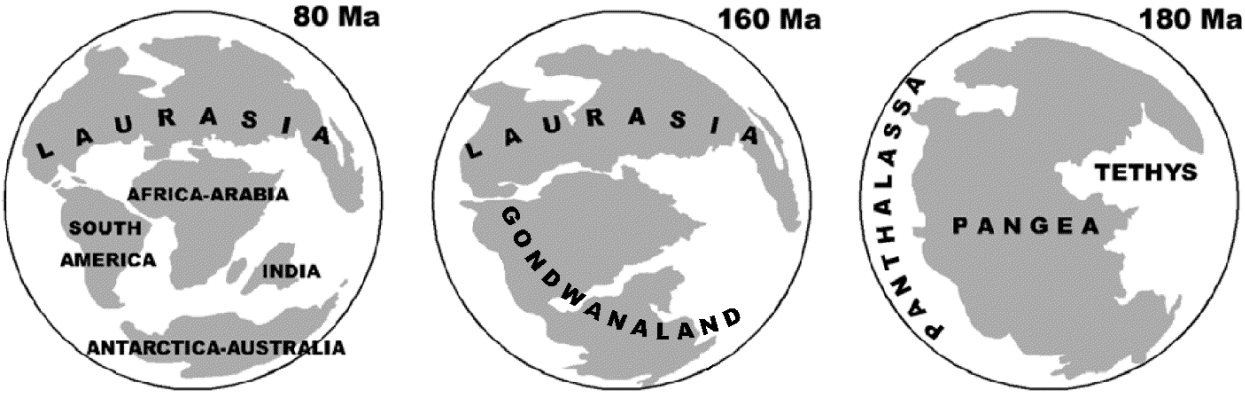

Figure g 23.1

80 million years ago

Then and before there was no North Atlantic. North America, Greenland, and Europe that exist today are evidently pieces of a supercontinent that existed then. That supercontinent is called *Laurasia*. The other continents and lands were South America, Africa-Arabia, India, and Antactica-Australia-New Zealand.

160 million years ago

Then and before there was no South Atlantic. The southern hemisphere continents that exist today, were then joined with a common mobile belt called *Samfrau*. India had no separate identity and its area was part of the Jurassic *Gondwanaland* continent. into which the Indian Ocean, at first, was a westward-entering narrow gulf between its southern part, destined to break into Antarctica, Australia, India, and New Zealand, and its northern part, destined to break into Africa-Arabia and South America.

180 million years ago

Then a single super continent existed. It has been given the name *Pangea* (means: *all Earth*). The Pacific ocean is larger by the width of the Atlantic ocean. This ancestral, larger, Pacific ocean is named *Panthalassa* (means: *all ocean*). Also, the Mediterranean of today was then the western part of an ocean that opened eastward to Panthalassa. That great ocean inlet to Pangea is called the *Tethys* sea.

Footnote g23.1 India became an appendage (Indus-Tsangpo suture)[4] of Asia 55 Ma. In its northward drift in the opening Indian ocean, it, a biotic ferry, had left behind the biotic rafts of the Seychelles, which separated 64 Ma, and Madagascar, which separated 88 Ma. Australia parted company 130 Ma with Antarctica, which had become an island continent 160 Ma in the fragmentation of the Gondwanaland continent that had come to be when Pangea split into it and Laurasia 180 Ma.