

He said what? No way!

Geologic activity (volcanoes and faults) in the area around the Pacific Ocean (the famous Ring of Fire) had been recognized for several years.

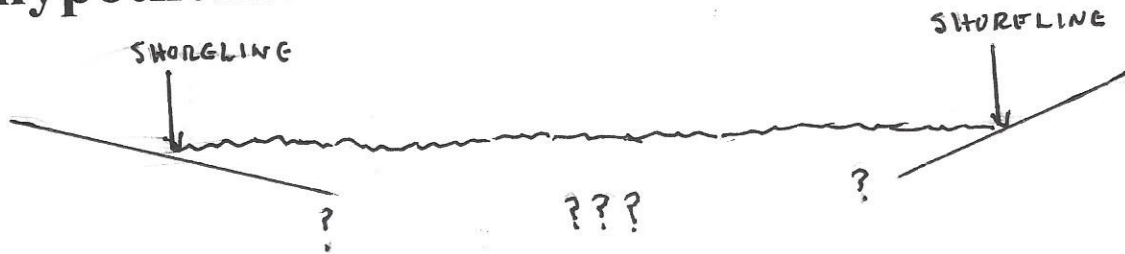
One of the first people who hypothesized an origin was F. B. Taylor in 1908. Taylor was an American geologist. His idea was that the moon was wandering through our Solar System and got too close to the Earth and was “captured” by the Earth during the Cretaceous Period. Since there was a new mass in the gravity formula ($F=k(m_1m_2/r^2)$), this exerted a pull on the Earth and caused this wrinkling. Since the Earth rotates on its axis and the Moon revolves around the Earth, there was no explanation of why this happened only in the Pacific Ocean but nowhere else. This would be considered a catastrophic origin.

In 1911 H. H. Baker hypothesized the idea of a single continent that split at the end of the Miocene Epoch. We know that the orbits of the planets are not circular. The orbits are more elliptical. Sometimes the planet is closer to the Sun and sometimes the planet is further from the Sun. Baker said that Venus was furthest from the Sun and the Earth was closest to the Sun, and when the two planets were closest to each other, the gravity of Venus pulled the Moon out of the Pacific Ocean and then the continents began to move to fill in the void. Questions arose as to how close the planets would have to be to generate such force and would Venus have enough mass to generate such force. This would be considered a catastrophic origin.

In 1912, Alfred Wegener made his hypothesis. Wegener was a German meteorologist, geologist, geophysicist, biologist, climatologist, and glaciologist. He had worked years in Greenland doing glaciology. In other words, he had a background in science. He hypothesized that this started as one large 'super continent' and it separated over a long period of time (Mesozoic Era to the early Cenozoic Era). He suggested this was accomplished by small forces acting over a long time not a catastrophic origin. His initially based his hypothesis on continental shape (the contact between the land and the ocean). He noted the convex shape of Brazil on the east side South America and the concave shape on the west side of Africa. Could they have once been together and at some time later separated? You can do the same by taking a paper map of the world, cut out around the continents, and put together like doing a

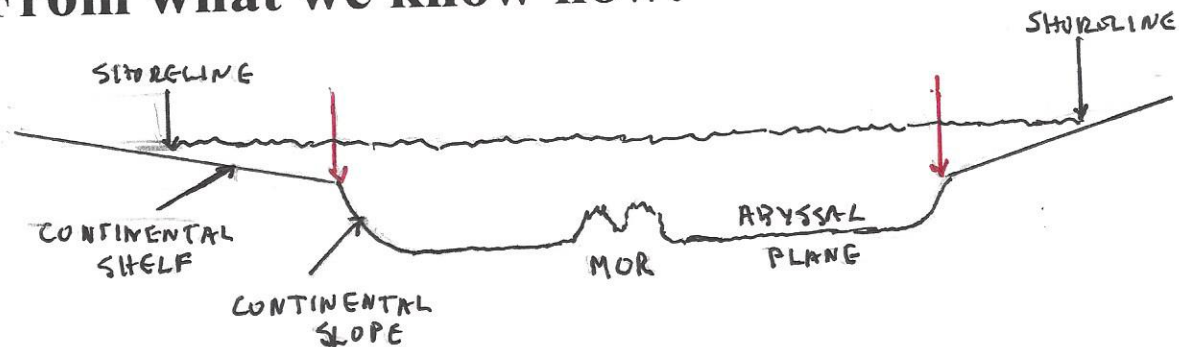
jigsaw puzzle. There are some gaps and some places of overlap, but not too bad a fit.

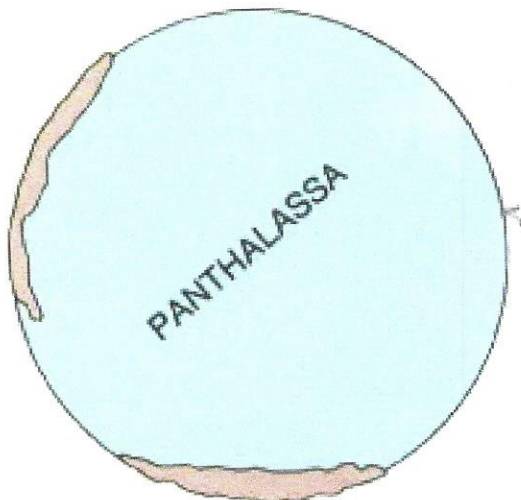
What we knew when Wegener proposed his hypothesis:



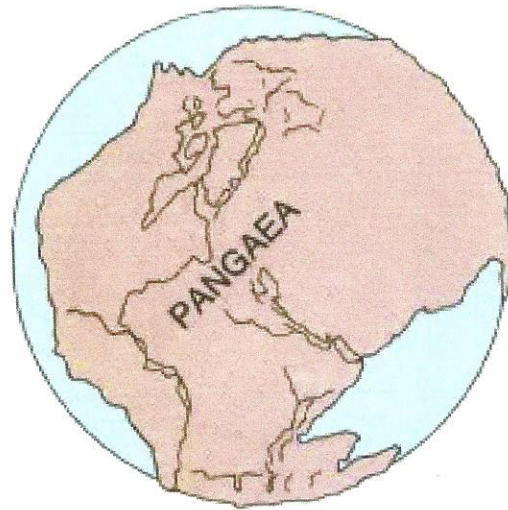
Interesting enough, if you use the break between the continental shelf and the continental slope as the edge of the continent and do the same thing, the fit is better.

From what we know now:

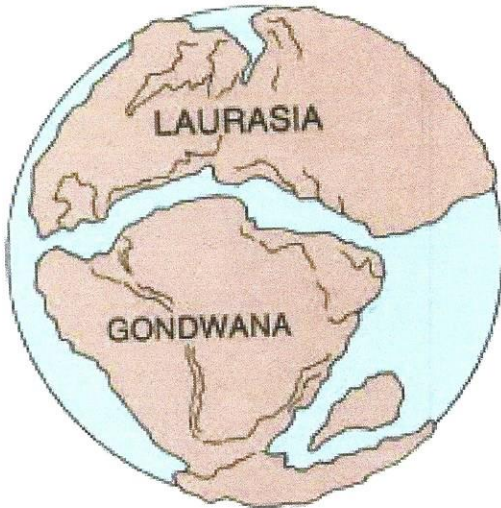




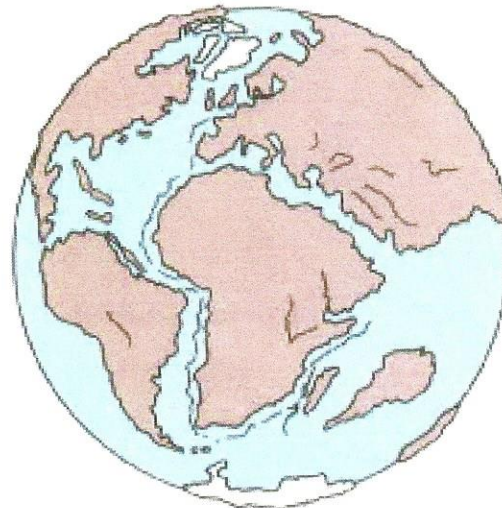
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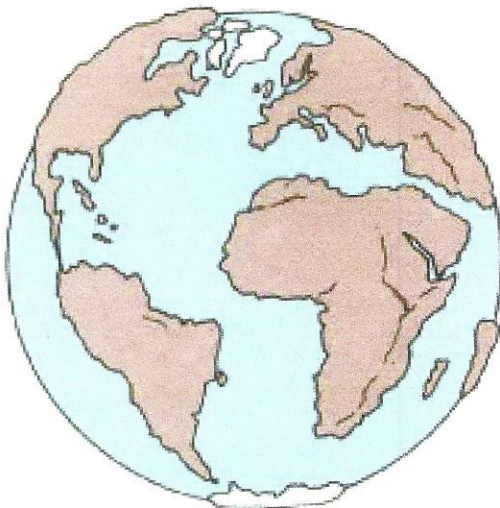
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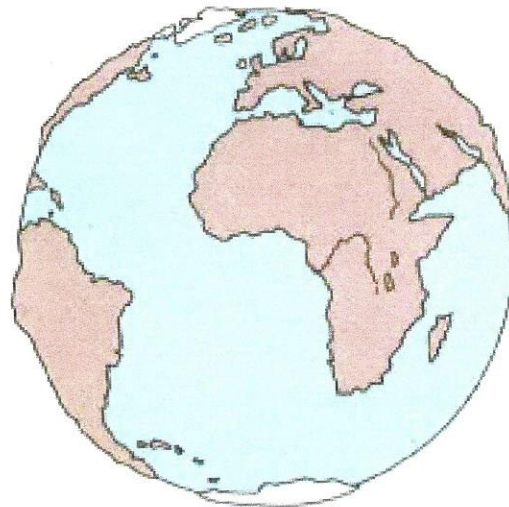
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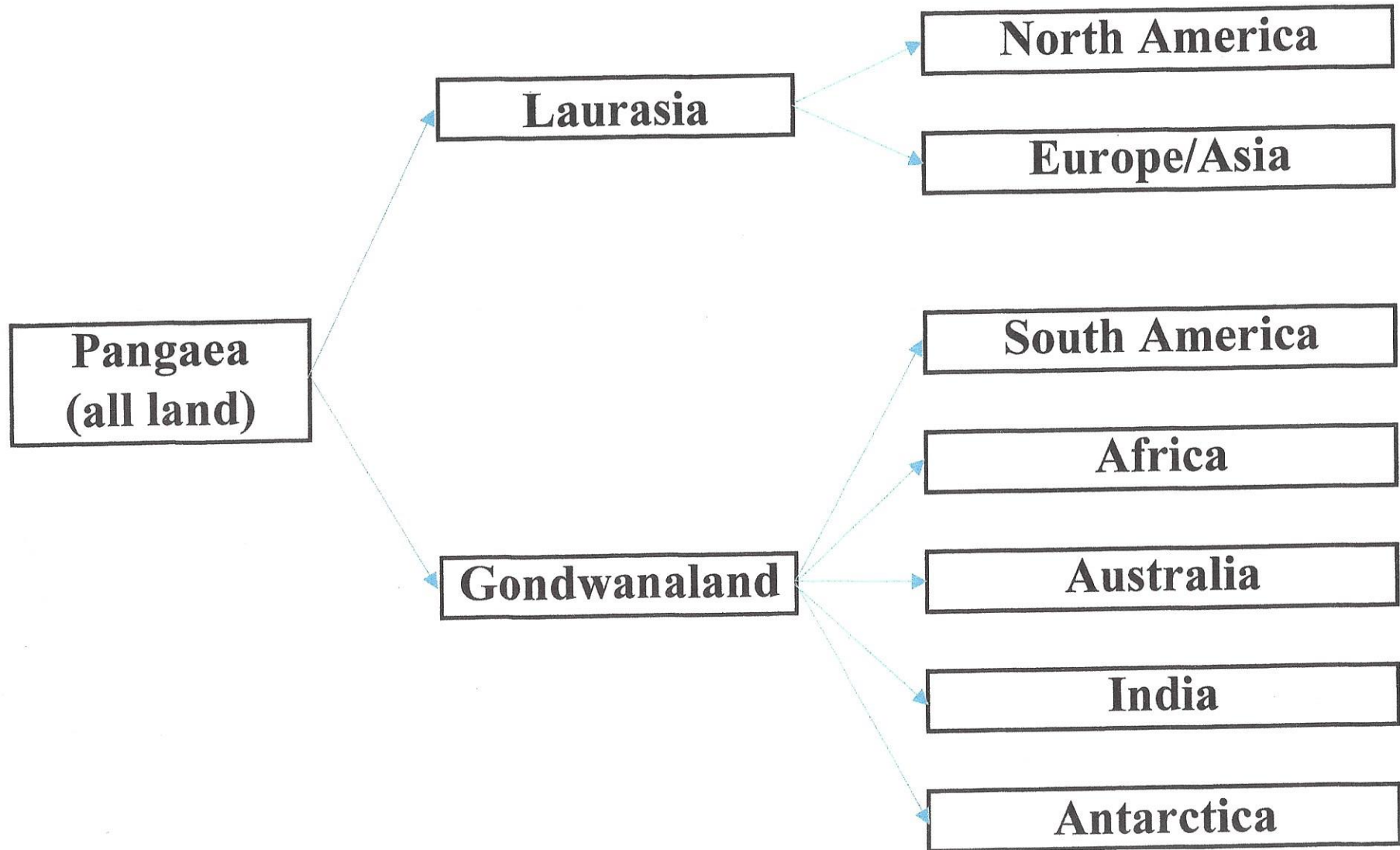


E



F

The breakup of Pangaea:



No way! The continents have always been where we see them today! This hypothesis is ridiculous! The geological community was in a tizzy. They said “How did this happen?” “What caused this?” Wegener explored several potential causes. These were (1) centrifugal effects of the Earth’s rotation, (2) tidal effects, and (3) precession of the Earth on its rotation axis. None of these would do what he suggested. He couldn’t come up with a cause. Because he could not explain the cause, his hypothesis was essentially dismissed and he was excluded from the scientific community. He returned to Greenland where he eventually died and is buried.

Since Wegener proposed his hypothesis significant information has been discovered from a significant number of different disciplines which support his idea. Let’s look at this evidence.