

## CHAPTER 5

### THE FIRST LAND

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*Then God said, "Let the waters below the heavens be gathered into one place, and let the dry land appear"; and it was so.*

*Genesis 1:9*

**T**oday, both continents and ocean basins are part of the Earth's crust. Continents are relatively high and ocean basins are relatively low because the continents consist of lighter (granitic type) rocks than the heavier, denser (basaltic type) rocks underlying ocean basins. Basically both the continents and the rocks underlying oceans float on a hot semi-molten plastically deforming underlayer. The continents float higher because they are lighter than the heavier basaltic rocks underlying the ocean basins.

#### THE GLOBAL SEA

Continents and deep ocean basins have not always been present on the planet Earth. At the end of the era of water formation 3.5 billion years ago, virtually the entire surface of the globe was under water, covered by a shallow sea (see figure 5.1). The surface of the Earth was essentially flat and level. The seas spread over this relatively even surface, blanketing the globe to a depth of about one mile.

About 3.5 billion years ago, huge dome-like blocks of granite welled upward from the depths of the mantle. These intrusions were more than twenty-five miles in height and formed the enduring core or *cratons* of the continents. The precise cause of these granitic (lighter rock) cratons thrusting up from the mantle below is unknown, but most geologists think that the enormous heat energy required was produced primarily by radioactive nuclides in the upper mantle. Also, residual effects from cosmic bombardment may