

## The Layered Earth

By Patti Hutchison

1 Have you eaten a boiled egg? If you have, you know that it has are three layers. The earth also has three layers, much like an egg.

2 An egg has a thin outer shell. Earth does also. This is called the crust. If you run your finger over the shell, you will feel small bumps. The shell can be thicker in some parts than in others. The earth's crust is like this, too.

3 The crust of the earth is very thin and rigid compared to the other layers. There are two types of crust, oceanic and continental. Beneath the ocean, the crust is only about five kilometers thick. The average thickness of crust below the continents is about thirty kilometers. But under mountain ranges it can be as deep as 100 kilometers.

4 Oceanic crust contains mostly oxygen and silicon. Continental crust is made up of two layers of rocks. The top layer is made of granite. The bottom layer is basalt. Elements in the earth's crust include aluminum, iron, sodium, and calcium. Like an egg shell, earth's crust can easily be broken.

5 The crust is the upper part of the lithosphere. This is the solid, top part of the earth. It is broken up into at least seven sections called lithospheric plates.

6 About 50 kilometers below earth's surface lies the mantle. It extends to a depth of 2900 kilometers. The mantle makes up 80 percent of earth's volume and contains about 68 percent of its mass. The mantle can be compared to the white of the egg

7 The mantle is denser than the crust. It is divided into two layers, the upper mantle and the lower mantle. The upper mantle is cooler and denser than the lower mantle. It is also part of the lithosphere.

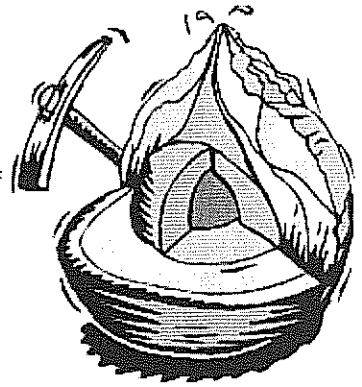
8 Below the lithosphere is a layer called the asthenosphere. The temperature of this layer ranges between 700 and 1300 degrees Celsius. Here the rock is somewhat molten. It is not rigid; it moves like a thick liquid. Scientists believe that the continental plates float on this layer.

9 The lower mantle begins at a depth of about 1000 km. The temperature varies between 1800 and 2800 degrees Celsius. Pressure also increases with depth. The mantle is made mostly of iron, magnesium, oxygen, and silicon.

10 Below the mantle lies the core. It can be compared to the yolk of the egg. This is the middle of the earth. The core is divided into two parts. The outer core begins at a depth of about 2900 kilometers. It is mostly liquid iron. It has an average temperature of 3200 degrees Celsius. As the earth rotates, the liquid outer core moves. Scientists think this is what causes the earth's magnetic field.

11 About 5100 kilometers below the earth surface is the solid inner core. It has a radius of about 1300 kilometers. It is made of iron and nickel. The temperature is more than 5000 degrees Celsius. At this temperature, iron and nickel usually melt. However, the intense pressure at this pushes the particles together tightly. They remain solid and very dense.

12 Even though no human has gone there, we know a lot about the interior of the earth. If you could journey to the center of the earth, you would go through various layers of solid and molten rock. You would eventually arrive at the solid iron core.



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<p>1. The thin outer shell of the earth is called the _____</p>	<p>2. Name the two kinds of crust.</p> <p>_____</p> <p>_____</p>
<p>3. The white of a hard boiled egg is most like which part of the earth?</p>	<p>4. What two layers of the earth make up the lithosphere?</p> <p>_____</p> <p>_____</p>
<p>5. Describe the outer core</p>	<p>6. Describe the temperature of the inner core? Why is it this hot?</p>