Passage 1

Grade 6 · Science · 516 words

Science

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Inside a Volcano

1 Few sights on Earth are as powerful as an erupting volcano. Fountains of glowing lava shoot into the air, and clouds of ash can rise miles into the sky. To understand why volcanoes erupt, you have to look far below your feet.

2 Earth is made of layers. We live on the crust, a thin, rocky shell. Beneath it lies the mantle, a thick layer of extremely hot rock that flows very slowly, like warm taffy. At the center is the core. The crust is not one solid piece. It is broken into giant slabs called tectonic plates, which float on the mantle and drift a few centimeters each year, about as fast as your fingernails grow.

3 In some places, rock deep underground melts. Melted rock beneath the surface is called magma. Because magma is lighter than the solid rock around it, it rises, collecting in pockets called magma chambers. Magma also holds dissolved gases, such as water vapor and carbon dioxide, much like a bottle of soda holds bubbles. As magma rises and the pressure on it drops, those gases form bubbles and push outward. When the pressure becomes too great, the magma bursts through the surface. Once it reaches the surface, it is called lava.

4 Most volcanoes form near the edges of tectonic plates. Where two plates pull apart, as they do in Iceland and along ridges on the ocean floor, magma wells up to fill the gap. Where one plate slides beneath another, the sinking rock melts and feeds chains of volcanoes. A great ring of these volcanoes circles the Pacific Ocean. It is nicknamed the Ring of Fire, and it is home to most of Earth's active volcanoes. A few volcanoes, like those in Hawaii, form in the middle of a plate, above an unusually hot spot in the mantle.

5 Not all volcanoes look or act the same. Shield volcanoes, such as Mauna Loa in Hawaii, are built by runny lava that spreads out in thin sheets. Over thousands of years, these layers build a wide mountain with gentle slopes, shaped like a warrior's shield lying on the ground. Their eruptions are usually not explosive. Composite volcanoes, also called stratovolcanoes, are steep, cone-shaped mountains made of layers of ash and thick, sticky lava. Because their magma is so thick, gas has trouble escaping, and pressure builds until the volcano explodes. That is what happened at Mount St. Helens in Washington State on May 18, 1980, when an eruption blew away the entire top and side of the mountain.

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