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CONTINENTS
PLATE tectonics
CARBON dioxide

Abstract: The Earth's rocky crust is divided into seven landmasses or continents: Africa, Antarctica, Asia, Australia, Europe, North America, and South America. The shapes and sizes of the continents are continually changing, but very slowly. The continents broke apart 300 million years ago and began to drift on plates of the earth's lithosphere. The theory of plate tectonics divides the world into plates made up of parts of continents and parts of ocean. An easy way to search for proof of plate tectonics is to look at a map. For example, the western shore line of Africa and the eastern shore line of South America fit together. Scientists also present evidence supporting plate tectonics by plotting the occurrence of earthquakes and volcanoes. New plates are being made all the time. One prediction for future plate movement is that in millions of years, the continents of North and South America, which share a plate, will collide with the continental plate of Asia. Carbon dioxide is used by green plants during photosynthesis. Carbon dioxide in the blood stimulates breathing. INSET: Carbon Dioxide and Atmosphere.

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Plate Tectonics

The Earth's rocky crust is presently divided into seven landmasses or continents: Africa, Antarctica, Asia, Australia, Europe, North America, and South America. The shapes and sizes of the continents are continually changing, but very slowly.

The earliest maps of the south Atlantic Ocean showed a remarkable fit between the shapes of the coastlines on either side. It took time to understand what kind of mechanism could move the continents, but it is now known that the continents are moving, and at a rate (a few inches each year) that can be measured.

In 1915, Alfred Wegener published his theory of drifting continents. The theory held that all the continents of the earth were once united in a huge land mass called "Pangaea."

The continents broke apart 300 million years ago and began to drift on plates of the earth's lithosphere. People had been posing this idea since the 4th century B.C.E., when Aristotle noticed that marine animals could be found on the tops of mountains. Today, however, much more evidence exists to support the theory of plate tectonics.

Forty years after Wegener, technological advances revealed a great deal of information about the ocean floor. The discovery of magnetic stripes by two British research scientists, F. Vine and D. Matthews, in 1963 suggested that the ocean floor is made up of younger rock than exists on the continents.

This led to the theory of plate tectonics, which divides the world into plates made up of parts

of continents and parts of ocean. An easy way to search for proof of plate tectonics is to look at a map. Notice that the western shore line of Africa and the eastern shore line of South America fit together. These areas have fossils in common even though in the present they are separated by thousands of miles of ocean.

Scientists also present evidence supporting plate tectonics by plotting the occurrence of earthquakes and volcanoes. Most earthquakes happen along the boundaries of continental plates.

The San Andreas Fault Zone in California is at the place where one plate slides along the edge of another.

The volcanic islands of Japan are created as one plate slides on top of another.

New plates are being made all the time. One prediction for future plate movement is that in millions of years, the continents of North and South America, which share a plate, will collide with the continental plate of Asia. The Himalayan Mountains will continue to grow higher as the continent of Asia slides on top of India. Eventually all of the continents may merge to form another huge land mass and the whole process will start over again.

The formation of new crust along fault lines also means the formation of new minerals, pushed up from the Earth's mantle, which grow or cement together to form rocks.

Scientist now believe the Earth's crust breaks apart due to erosion and earthquakes.

Small pieces of Earth are pulled into the planet's hot mantle, where they later resurface along fault lines produceing new crust.

The oldest known rock formations are found in the northwestern region of Canada.

MAP

PHOTO (BLACK & WHITE)

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Carbon Dioxide and Atmosphere

- Carbon dioxide is used by green plants during photosynthesis (a process in which light is converted into chemical energy).
- Carbon dioxide in the blood stimulates breathing. This is why it is used with oxygen in artificial respirators.
- Carbon dioxide is 1.5 times as dense as air. The atmosphere contains carbon dioxide in variable amounts; usually 3 to 4 parts per 10,000.
- Solid carbon dioxide (called dry ice) is used as a refrigerant Dry ice does not melt into a liquid, but becomes a gas. This produces an inert atmosphere that lessens bacterial growth.
- Carbon dioxide does not burn or explode. It is used to extinguish fires.

