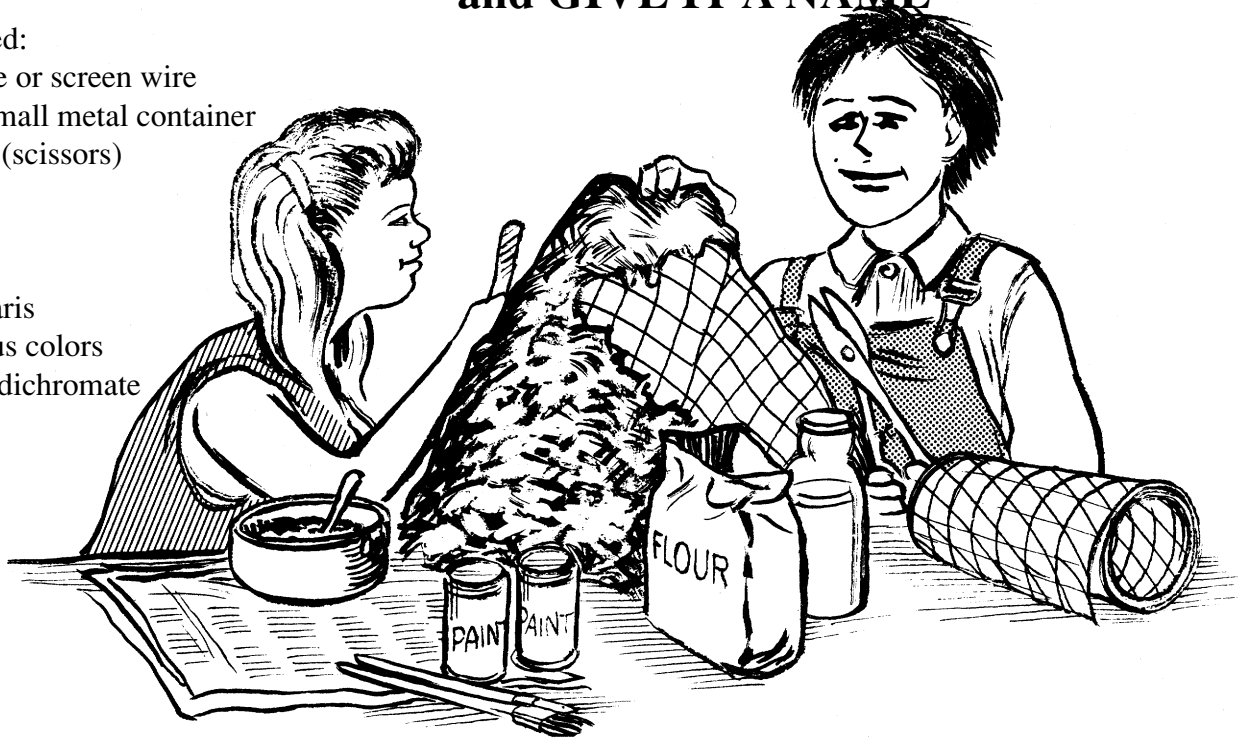
MAKE YOUR OWN SUPER VOLCANO and GIVE IT A NAME

Materials Needed:

- chicken wire or screen wire
- tin can or small metal container
- wire cutters (scissors)
- newspaper
- flour
- water
- plaster of Paris
- paint, various colors
- ammonium dichromate



Form the wire to resemble a mountain, leaving a hole in the top. Cover the wire with paper mache. (Layer newspaper with a paste made from flour and water.)

After the paper mache has set-up and dried, cover it with plaster of Paris to make it more fire proof. Use paint to illustrate rocks, trees, and whatever else you think is on the *mountain*.

Put a small amount of ammonium dicromate in the metal container. Place the metal container on a sturdy box so that it is near the cone opening under the volcano. Light the ammonium dichromate with a match. Now, watch your volcano spit out ash.

Be sure that the classroom windows are open for good ventilation.

This experiment also can be done outdoors if weather permits.

Volcanoes and earthquakes create new mineral wealth!

Here is another VOLCANO activity

It is simple and a fun experiment:

Glue a plastic film canister on a piece of cardboard.

Put paper mache around it. When each student's volcano is dry, put a small amount of baking soda into canister.

To make the "volcano" erupt — pour a mixture of vinegar and red food coloring into the baking soda.

This simple activity allows each student to build his or her own small model volcano. They can even have a teaching experience by showing their families how it works.

DID YOU KNOW

The United States has 70 potentially active volcanoes — more than any nation except for Indonesia and Japan

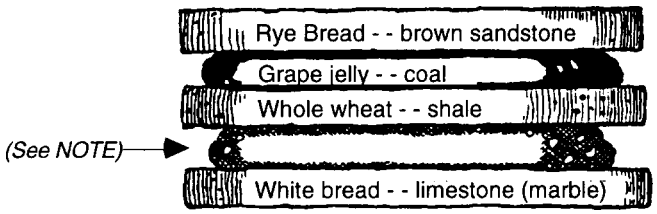
ACTIVITY - **SEDIMENTARY ROCKS**

To give students a basic understanding of how sedimentary rocks are formed, make a sandwich to illustrate the makeup and structure of the earth beneath our feet.

Procedure

Make a sandwich using white bread, peanut butter, rye bread, grape jelly, raisin bread, or whatever breads and ingredients the student likes.

As the students build their sandwich keep track of their progress by drawing a large diagram on the chalkboard. It should look something like this:



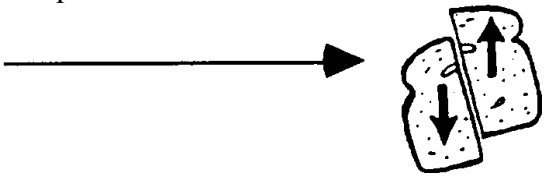
(Note: each item can represent whatever **resource** the student wants it to be. Examples: cheese = clay; mayonnaise = oil/natural gas; chunky peanut butter = halite (salt).

Use imaginative rock names such as *rye bread sandstone* or *grape jelly coal*, etc. Use the sandwich to show how sedimentary rocks were deposited in layers. Tell the story of how sedimentary rocks were formed as the sandwich is built. When the sandwiches are ready, have a question and answer session on relating the age of the sandwich layers to the rock layers.

Sample questions:

1. Which is the oldest layer? Why?
2. Which is the youngest? Why?
3. Who can tell us the age of the middle layer?

Fault Illustration—Cut one sandwich in half and hold the two halves together in front of the class. Slide the two halves past each other like this:



You have just shown how **faulting** can occur.

NOW—everyone can enjoy their sandwiches!

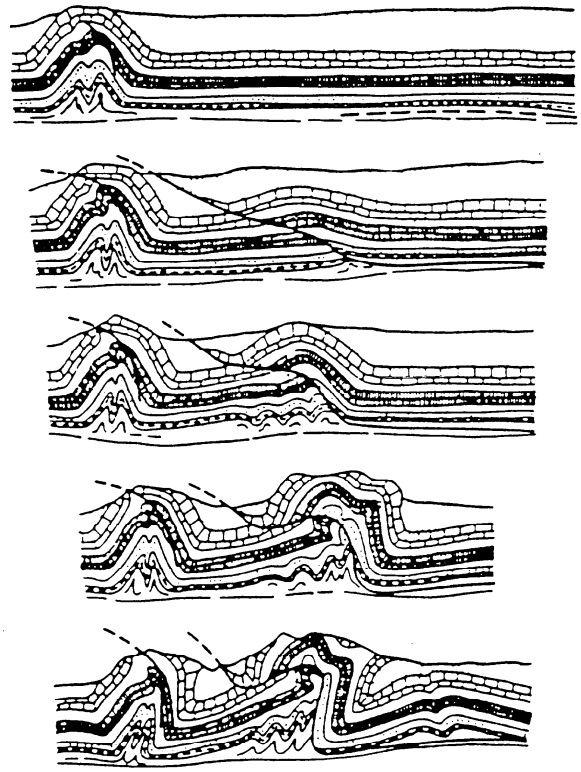
ACTIVITY - **MOUNTAIN BUILDING**
Folding and Faulting

Have students color each layer of rock in the enlarged diagram. They will then see and follow each layer of rock from deposition of younger rock over older rock in orderly layers. By using the same colors chosen for each layer in diagram 1, the folding and faulting processes that happen when mountains are forming can be easily seen. These structural changes are caused by uplift movements of the Earth's crust and also can be a result of volcanic action and earthquakes.

The diagram below has been enlarged on the next page to make it easier for students to color... and for them to understand why veins 'disappear' and why some ore deposits can only be found by drilling. The same type of changes in the Earth's crust make finding oil and gas deposits equally difficult.

Note: Suggest that students use the blacker formation which doesn't need to be colored and designate it as **coal**. Yellow is good for gold, green can be used for copper. Also, note the faults that have taken place is diagram 2, and also how erosion progresses through the remaining diagrams. Make a *key* for colors and minerals selected by students.

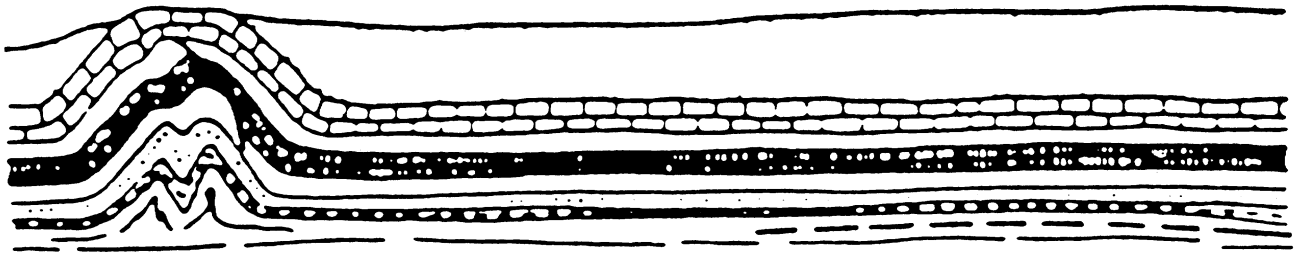
Mountain building is a fun thing to explore!



MOUNTAIN BUILDING

Fold and Fault Structures

1



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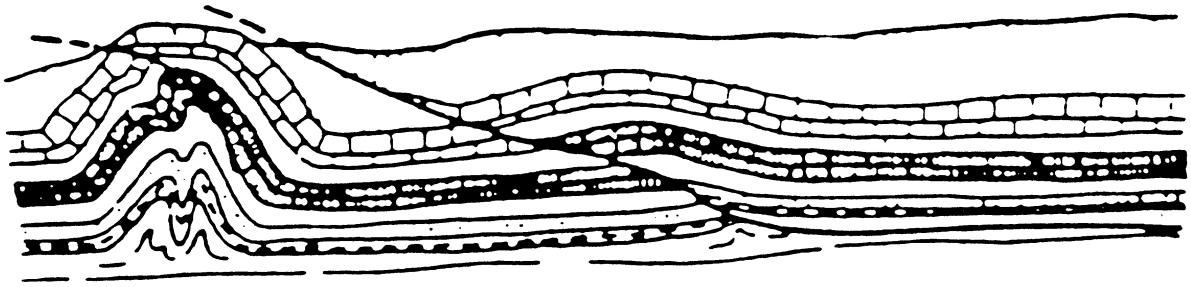

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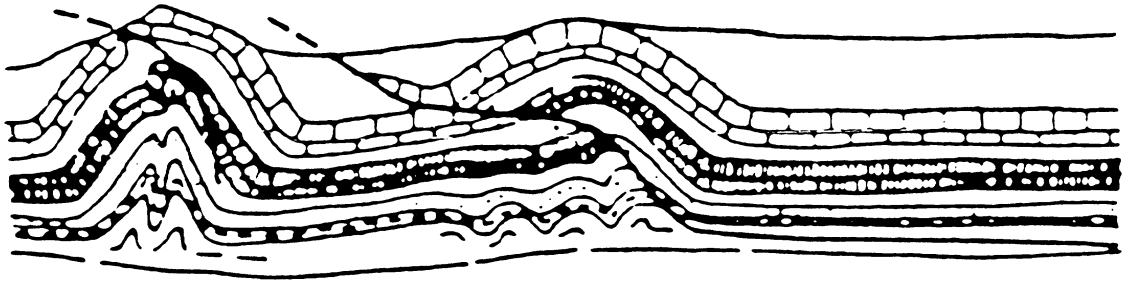

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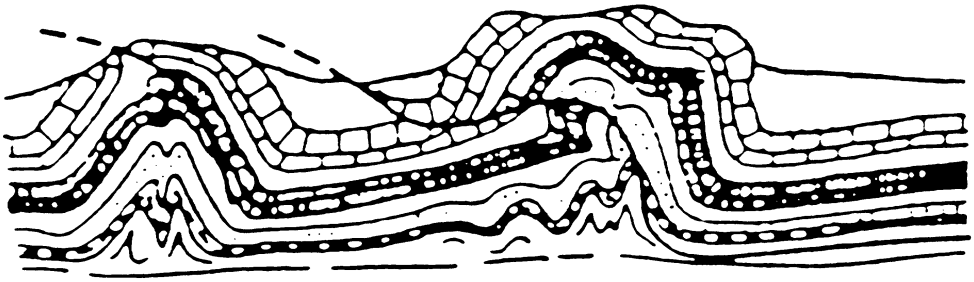

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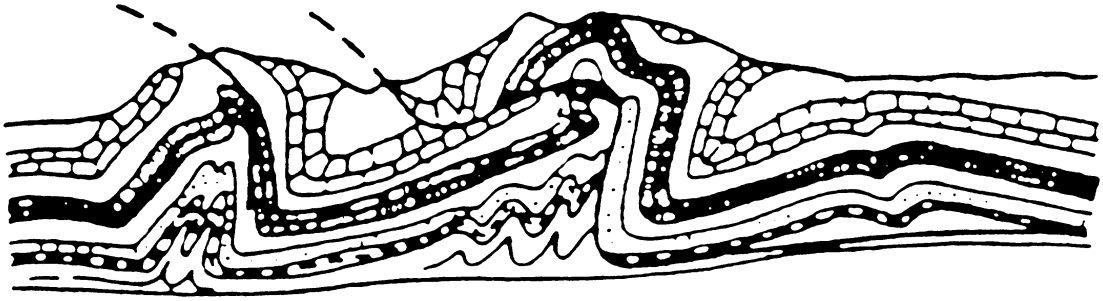

Origin of Mineral Names

(Etymology)

Antimony: A Middle English to Old French word.

Asbestos: Greek word— to extinguish.

Barite: Greek word— weighty.

Bauxite: named after a town, les Beaux (beautiful), in southern France.

Beryllium: Latin and Greek words—a gem.

Columbite-tantalite: Latin—Columb former name of niobium.

Copper: Greek name—Cyprus, an island in the Mediterranean known for its copper mines.

Diamond: Greek—invincible.

Dioptase: Named by Hau'y from Greek—transparency.

Feldspar: German words—field, spar (a rod or spear).

Fluorspar/fluorite: Latin—flow, flux.

Gold: Old English or Old Norse words— to shine, gleam.

Graphite: Greek word—to write.

Gypsum: Greek word—chalk.

Halite: Greek word, hals—salt.

Iron: Indo-European word—to move vigorously, strong.

Kyanite: also spelled cyanite; cyano or kyanos, Greek word for blue, the common color of kyanite.

Lead: akin to Old and Middle English, Dutch, and German words—plummet.

Lithium: Greek—a stone.

Mica: Latin—a crumb, grain, particle; also to shine, glitter.

Molybdenum: Greek—lead, galena.

Niobium: Latin and Greek—niobe; Niobe (Greek Myth) a queen of Thebes, daughter of Tantalus, who, weeping for her slain children, was turned into a stone from which tears continue to flow.

Perlite: French—pearl.

Potash: Dutch—potasschen, a word referring to the preparation by evaporation of the lixivium of wood ashes in iron pots. "Potash" is loosely used for potassium carbonate, p. oxide, or p. hydroxide.

Pyrite: Greek—flint or millstone, fire stone.

Quartz: German, quarz, unknown meaning.

Silica: Latin—silex, flint.

Silver: Middle and Old English, German, Gothic—probably a loanword.

Smithsonite: Named for an Englishman, John Smithson (1765?-1829), founder of the Smithsonian Institution. He was a well-known chemist and mineralogist and he discovered the chemical properties of the mineral named after him.

Sodium carbonate (soda ash, trona): Middle Latin or Italian—soda (firm, solid).

Sphalerite: German—sphalerit and Greek—sphaleros; to deceive, so named from being mistaken for other ores. The principal ore of zinc.

Stibnite: Latin—antimony.

Sulfur: Middle English and Latin—sulphur.

Tantalum: Modern Latin and Greek—Tantalus, son of the mythical god/king Zeus.

Tungsten: Swedish—heavy stone.

Vanadium: Old Norse—Vanadis, a name of the goddess Freya.

Zeolite: Swedish and Greek words—to boil; so named by A.F. Cronstedt (1702?-65) Swedish mineralogist, from its swelling up when heated.

Zinc: German—prong, point.

Zoisite: named after Baron von Zois, an Austrian.

Platinum Group Minerals

palladium: Greek, Pallas, the goddess;

rhodium: Modern Latin or Greek—a rose;

iridium: Latin—rainbow;

osmium: Modern Latin, named in 1804 by its discoverer, S. Tennant, English chemist;

ruthenium: Modern Latin— Ruthenia (Russia), because it was first found in ores from the Ural Mountains.

Rare Earth Elements

cerium: named in 1803 after the asteroid Ceres;

dysprosium: Greek—difficult of access;

erbium: Modern Latin—named after Ytterby, Sweden, the town where first found;

europium: Modern Latin—Europe;

gadolinium: German— named by the Swiss chemist, J. Marignac, who discovered it in the mineral gadolinite in 1886; gadolinite was named after J. Gadolin (1760-1852) who isolated it;

holmium: Latinized form of Stockholm, the capital of Sweden;

lanthanum: Greek, to be concealed, hidden;

lutetium: Modern Latin— named for Lutetia, ancient Roman name of Paris;

neodymium: Modern Latin—neo (Greek, new), plus dymium;

praseodymium: Greek—green, plus dymium;

promethium: Greek— forethought;

samarium: French—named after Col. Samarski, Russian mining official;

terbium: named for Ytterby, a town in Sweden;

thulium: Latin—named after Thule, the northernmost region of the world, possibly Norway, Iceland, Jutland, etc.;

ytterbium: Modern Latin— Ytterby, village in Sweden.