

HARD ROCK CANDY MOUNTAIN Big Taffy Mountain

Dana Van Burgh, Geology, vanburgh@caspercollege.edu

GOAL: To provide an activity that will encourage students to consider geologic time and the movement of solid rock.

RATIONALE: In the first geology class I took, three chalk lines curving up and back down represented layers of rock folded into an anticline. No time involved and no direct contact. In this activity students can actually watch the bending of layers over time. Instead of millions of years the time is a few days, but to students used to instant gratification, this exercise takes forever.

APPROXIMATE TIME: A few minutes per day over at least three days. Some of my students grow impatient and speed it up but that misses the point.

MATERIALS: A couple of Big Hunks. At least six Air Heads. Tangy Taffy or Laffy Taffy may be substituted but are not as good, or as cheap, as Air Heads. Quart bags and sandwich bags.

DIRECTIONS: Part 1. Unwrap a Big Hunk and place it in a quart bag. Wrap the bag around it. Hold the bar horizontal by one end so they can see it is rigid. Now gradually bend it into an anticlinal form. Bend it back to flat. The Big Hunk represents a layer of rock. Given enough time and force, rock will bend in a similar way. Time for discussion of geologic time. Now put the wrapped bar into a second quart bag and wrap it around. Smack the bar against the tabletop so it shatters. Don't be gentle. Open up the bags and shake the pieces around so they can be seen. Take care; there may be holes on the bags. If not, remove the outer bag. How come the bar bent the first time and shattered the second? Does rock do the same thing? Now get out the one you shattered last week and stored in a warm place. Let them see how the pieces have stuck together. Would rock do the same thing? Examples?

Part 2. Give your students three or four Air Heads of different colors. Unwrap and stack them to form layers. Put this stack in a sandwich bag. (ZipLocks are not good for this.) Place this stack over a narrow support or support each end. Leave it were it will not be disturbed and watch what happens over a few days. Unwrap another set and stand them on end in a small jar or glass. Again, leave them for several days and watch what happens.

What happened? Why? What force was involved? What might control the rate?

The solid Air Heads bent without a person applying force. Could this happen to solid rock? What is the difference? What does this tell us about events over the age of the Earth?

Can you apply what you observed here to your daily life?

Relate geologic history to so-called "recorded" history.

If you were to write the complete story of the history of Wyoming, when should it begin?

Casper Mountain is an anticline. Can you relate it to your stack of Air Heads? Think about the force and time involved for it to form.

Do you see why I refer to geology as a "mind expander?"