

SCIENCE @ THE LIBRARY

MAKE AND TAKE THIS EXPERIMENT HOME!

CARTESIAN DIVER

Observe the effects of pressure on buoyancy.

MATERIALS:

Eyedropper

Two liter bottle

Room temperature water

Tall drinking glass to hold water

WHAT TO DO:

Fill the drinking glass with room temperature water. Gradually draw water into the eyedropper until the eyedropper floats in the glass with its top barely above the surface.

Fill the soda bottle almost to the top with room temperature water.

Put the eyedropper or "diver" into the bottle. Screw the top of the bottle on tightly.

Next, squeeze the bottle. If you squeeze it hard enough, the "diver" should sink.

Once you get feel of it, the "diver" will float when you aren't squeezing the bottle, and sink when you do. You can make it go up and down with very little effort.

WHAT IS HAPPENING?

There is a small air bubble inside the eyedropper. When the eyedropper is inside the bottle and you are not squeezing, the bubble is large enough that it will make the eyedropper float very nicely. However, when you squeeze the bottle, you increase the pressure inside the bottle. This will compress the air bubble, which will increase the density within the eyedropper and it will sink.

Submarines use a similar principle to control their buoyancy, as do some fish.