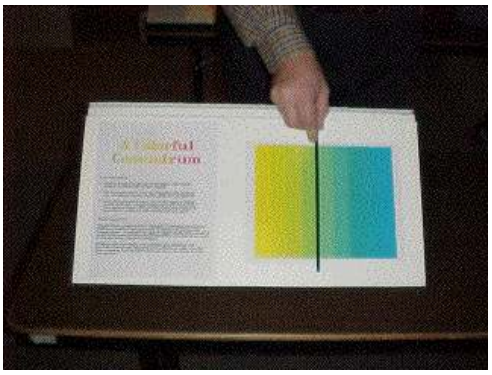
Colorful Conundrum



To Do and Notice:

Use a pencil, pen or dowel rod to cover the boundary between two adjacent colored strips. What happens? Try covering the boundary between other strips. Does the color of the rod make a difference?

Can you explain your observations?

What's Going On:

When a dowel rod is placed over the boundary separating two adjacent color strips, the strips appear to be the same color. When the dowel is removed, the strips are clearly different.

This exhibit demonstrates the importance of edges in helping our brain interpret images. Your eye-brain system enhances the ratio of reflected light at edges. If one region of the retina is stimulated by light, lateral connections turn down the sensitivity of adjacent regions. This is called *lateral inhibition*. Conversely, if one region is in the dark, the sensitivity of adjacent regions is increased. This means that a dark region next to a light region looks even darker, and vice versa.

When the dowel rod is absent and the boundary is visible, lateral inhibition enhances the contrast between the two colors. When the dowel rod is in place, the boundary between the two different colors is spread apart across the retina so that it no longer falls on adjacent regions. Lateral inhibition then does not help us distinguish between the different shades, and the eye-brain system judges them to be the same.