Tutorial on the use of stereoviewers in the *Aerial Stereograms* book

Some exercises in the *Introductory Geology Laboratory Workbook* use pairs of aerial photographs that are printed in the *Aerial Stereograms* book by H.R. Wanless. Your lab teacher will provide this book for your use during lab and you will be provided with a stereoviewer for use with this book. A caption is printed under each pair of aerial photographs. Please always read this caption because it can be very helpful in understanding the area, what you are looking at, and in providing needed background information, all of which can help you answer the questions in the exercise.

The stereoviewers that you will use in geology lab have metal legs that unfold and then the stereoviewer is placed on the open book over the pair of aerial photographs. See Figure 1, below. The central metal peg that holds the two sides of the stereoviewer together should be pointed *down* at the line between the two aerial photographs (as shown in Figure 1, but also see Figure 2 for the wrong way). You should place your face over the stereoviewer (there is a cut out for your nose) and look through the viewer with both eyes open. The stereoviewers flex slightly at the metal peg so that you can adjust the stereoviewer for the distance between your eyes. Flex the stereoview back and forth gently to adjust so that each eye is looking directly down through a lens on each side. With both eyes open, look directly down as if you are looking a long distance down to the ground. Once you relax your eyes and look down, you should see three-dimensional topography. Features on the ground will stand out with some significant vertical exaggeration. Ask your lab teacher for assistance if you are not seeing these features in three dimensions.

For more information, you are strongly encouraged to read pages i and ii in the *Aerial Stereograms* book when you get to lab.
Figure 1. Correct placement of the stereoviewer over a typical page of photographic pairs (or stereograms) in the *Aerial Stereograms* book. (From page ii in *Aerial Stereograms*.)

Figure 2. How **NOT** to unfold the stereoviewers. Notice that the central metal peg is shown UP in this picture. But, for proper use the metal peg must be pointed DOWN. So,
this advertisement shows the **WRONG WAY** to unfold the stere viewers. This is a common mistake made by those who do not know how to use stere viewers.

When you go to lab and try using stere viewers for the first time, the key to success is patience. You may not see the three-dimensional image the first time you look through the stere viewers. You should relax your eyes while looking through the stere viewer’s lenses and imagine that you are looking at things a long way off. *Both eyes must be open.* For most students, when they first see the illusion of depth* (3-D) effect, it is quite a surprise. The usual reaction is “wow.”

Remember that the illusion of depth* (3-D) effect is distorted and therefore landforms, etc. appear taller, steeper, and deeper than they really are.

**Background:** Stere viewers and stereograms (or photographic pairs) use the “illusion of depth” phenomenon of the human brain to create depth perception. This is a result of the way that the human brain works and human binocular vision. Illusion of depth technology has many aspects, including modern 3-D movies. In our geology labs, we are using a simple stere viewer technology that relies on what is called the “side by side” effect. In the side by side effect, what one eye sees is merged with what the other eye sees to create a 3-D effect in the human brain. You can read more about side by side effects and other illusion of depth phenomena (i.e., the science of stereoscopy) at the link below.