The Weather Glass

A weather glass is a small open barometer filled with water. It is a simple instrument designed to indicate atmospheric pressure rises and falls as the water in its spout falls or rises. It does not provide quantitative measurements of atmospheric pressure.

The weather glass was invented in the 16th century, probably by the Dutch nobleman Gheijsbrecht de Donckere. It has also been called a *storm glass* or a *water barometer*. The Pilgrims probably brought the weather glass to America in the 1620s, where it became known as a *Cape Cod weather glass*, a *thunder glass* or a *thunder bottle*. It was a popular tool with fishermen and farmers in the 17th through the 19th centuries because it was simple, inexpensive and could give a hint of coming weather through its indication of pressure changes.

The German poet and writer Johan Wolfgang von Goethe (1749-1832) had a great interest in the weather and became one of the most famous users of the weather glass in Europe. During his travels around the continent, he discovered the glass and then introduced it to the German-speaking countries. His promotion of the instrument linked it to him to the point where it became known as the *Goethe barometer*. His personal weather glass continues to hang in his former home (now a museum) in Weimar, Germany.

Here is a typical weather glass:

The weather glass typically consists of a glass bottle with an open spout. The bottle may be pear-shaped and is often flattened on one side so it can be hung on a wall. The bottle is partially filled with water which is coloured with a dye to make it easily visible. The surface of the water in the bottle lies at a level above the opening of the spout into the bottle.

The principle is that the air left in the bottle above the water exerts the pressure of the air at the time the bottle was filled, while the liquid in the spout is exposed to the changing atmospheric pressure. As the atmospheric pressure falls, the water in the spout rises, and vice versa. Because the spout is much narrower than the bottle, changes in water level in the bottle are amplified in the spout and so are easily visible.

The weather glass should be mounted out of the sun in a spot where the temperature does not change much, since the liquid within the bottle will expand and contract with increasing or decreasing temperatures, which will in turn cause false readings of pressure change.

The weather glass does not measure the actual air pressure, but gives only a qualitative indication of the changes in the air pressure. It can be used as a forecast tool: rising water in the spout indicates decreasing atmospheric pressure and perhaps clouds or precipitation, while falling water in the spout indicates increasing pressure and possible improving weather.