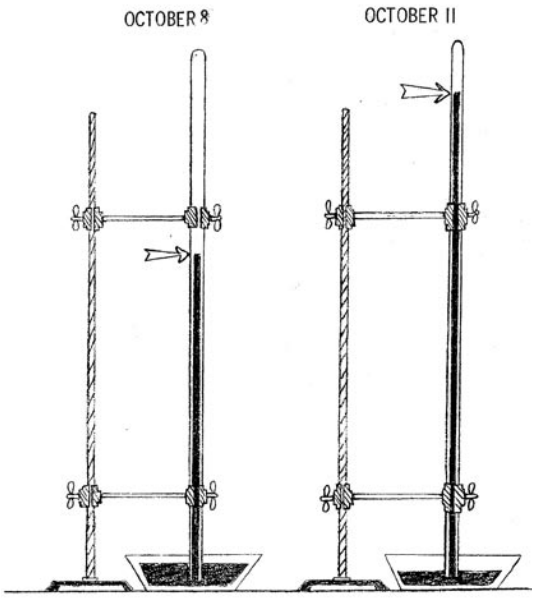
Evangelisti Torricelli and The Story of the First Barometer

Around the time of 1643, there was a young scientist/mathematician by the name of Evangelisti Torricelli who was very interested in air pressure. Scientists at the time knew that air pressure existed and they knew that it changed. They had an idea that when there was an air pressure change there was going to be stormy weather. But, they had no way of measuring the air pressure like they could measure temperature with a thermometer. Torricelli was very interested in finding a way to measure air pressure so he could see air pressure changes.

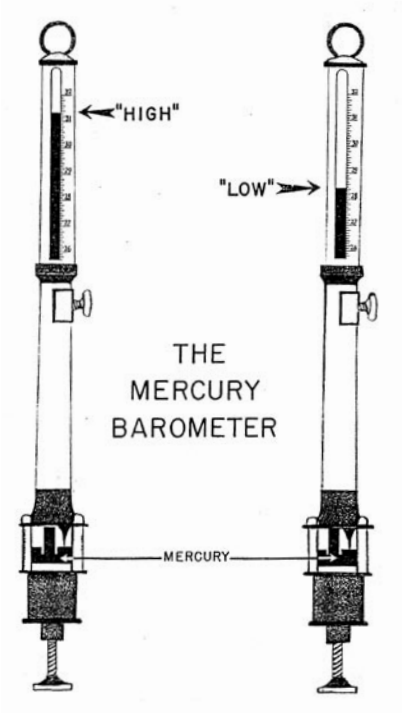
One day Torricelli got a 3-foot glass tube that was closed in at one end and open at the other. With a suggestion from his friend, Galileo, he filled the glass tube with mercury. Mercury is a liquid metal that is much heavier than water. He also had a bowl of liquid mercury. After filling the glass tube with mercury, he tipped the tube upside down, holding the open end with his finger so the mercury wouldn't run out. With his finger on the end he gently put the open end of the tube in the bowl of mercury. He then took his finger off the glass tube. At his surprise the mercury dropped about 6 inches to the 30-inch mark. He marked this point as a reference point so he could notice any changes in the level of the mercury inside the tube.

He set his mercury instrument up in a safe place in his laboratory and observed it many times a day. He put marking on the tube so he could see if the mercury level moved inside the tube. On October 8th he noticed that the mercury dropped below the 30-inch mark. Then a day later he observed that weather had changed and became stormy. On October 11th he noticed that the mercury jumped above 30-inch mark. He observed that the weather was fair a day or two later. He kept track of the changes of the level of the mercury in the tube.



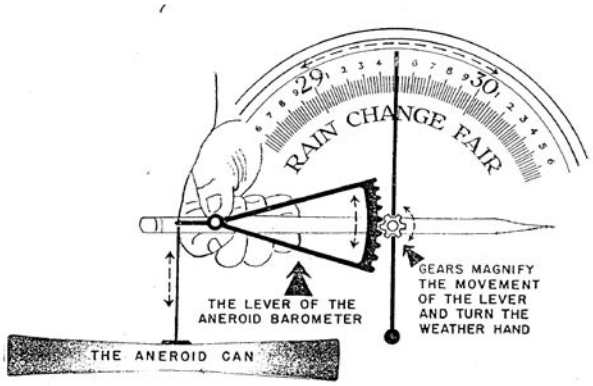
THE HEIGHT OF THE MERCURY CAN VARY FROM DAY TO DAY

Torricelli concluded that whenever the level of the mercury was below the 30-inch mark a storm was coming. And, the farther the mercury level was below the 30-inch mark the worse the storm. This is why we use the word "Low" because the mercury was lower than 30 inches in the tube. He also concluded that whenever the level of the mercury was above the 30-inch mark, fair weather was in its way. And, the

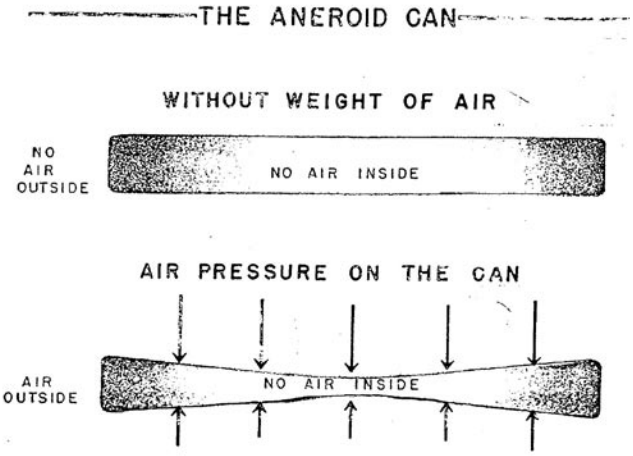


farther the mercury level was above the 30-inch mark the better the weather was going to be. This is why we use the word "High" because the mercury was higher than 30 inches in the tube.

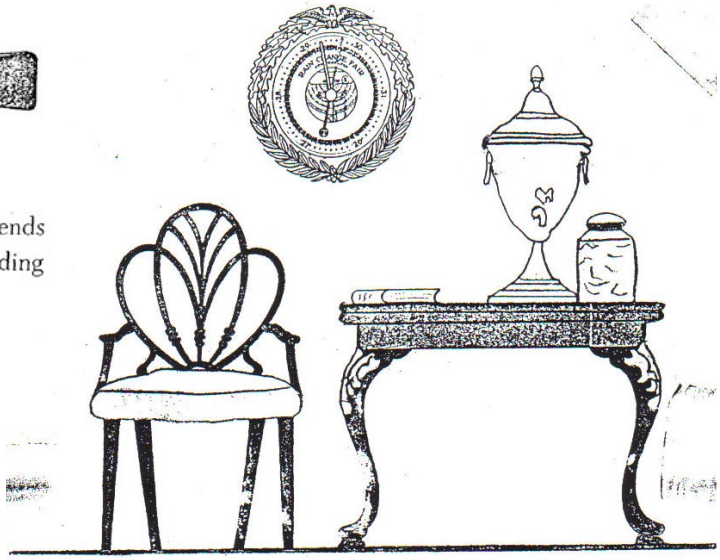
Meteorologists still use the mercury barometer today, because it is the most accurate instrument to use to measure air pressure change.



When the air pressure changes, the can top bends or straightens only a little bit; then the hand moves far enough for you to see the change.



Air pushes against the empty can and bends it in. As the air pressure changes, the bending changes too.



ANEROID BAROMETERS ARE MORE COMPLICATED THAN MERCURY BAROMETERS, BUT THEY ARE HANDY TO HANG ON THE WALL. THEY CAN BE MOVED EASILY BECAUSE THERE IS NO MERCURY TO SPILL. AND THEY ARE CHEAPER.