UNITED SCIENTIFIC SUPPLIES, INC.

OPERATING INSTRUCTIONS AND ACTIVITY GUIDE

ANEROID BAROMETER

ANBR01

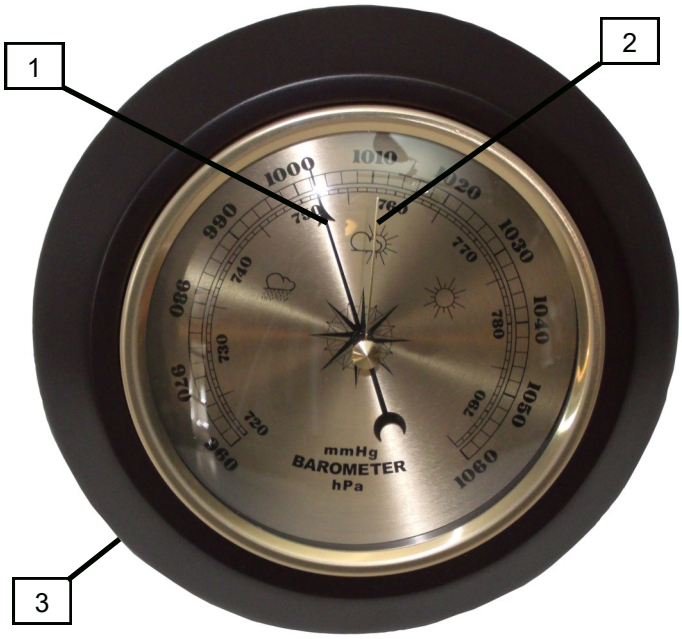

Figure 1

DESCRIPTION

A barometer is an instrument that measures air pressure. The first barometer was developed around 1644 by the Italian mathematician Evangelista Torricelli. He used a long glass tube, sealed at one end, placed in a mercury-filled container. Modern barometers built on this principle are still used in scientific institutions, but mercury is toxic and handling these instruments is inconvenient for most consumers, so another type of instrument, the ANEROID BAROMETER, is used instead. Although is it not as precise as a mercury barometer, it does not use liquids and the air pressure can be read directly from a pointer on a dial.

The aneroid barometer consists of a cylindrical metal container, closed at the back and sides and with a dial, pointers, and a glass cover on the front. The mechanism is mounted behind the dial, and is explained on page 3. There is a circular wooden base for mounting the barometer on a wall.

IDENTIFICATION OF COMPONENTS

1. Main Barometer arm
2. Movable pointer
3. Wooden removable base

PRE-LAB ASSEMBLY

First, hang the aneroid barometer in its permanent location. Every movement of the barometer will change the reading of the red pointer, so once the set pointer has been fixed, do not move the barometer.

Next, the barometer must be set to show air pressure at your altitude. Official barometric readings for your region will give you the mean sea level reading for your area. (These official recordings are usually broadcast over radio and television stations, or published in the local newspaper.) Note the time of the official reading, as well as the reading itself, so you can check your barometer at the same time of day that the official reading was made. If the set pointer is different from the official recording you will need to reset the pointer.

If you live more than 100 miles from the official recording site, take a reading on your barometer at either 9 a.m. or 3 p.m., then send the reading—along with the date and time—to the nearest meteorology station. (Enclose a self-addressed, stamped envelope.) Your reading can be compared to the isobaric chart for your region and you will be sent the information you need.

To adjust the set pointer, you need to turn the screw located in the small hole on the back of the barometer. Tap the barometer lightly while setting the pointer.

Once you have your barometer set correctly, use the gold knob on the front of the barometer to move the red pointer directly over the black set pointer.

An aneroid barometer has a metal capsule with flexible sides. The capsule contains a small amount of air. As air pressure increases, the capsule's walls contract. Even the slightest change in air pressure changes the thickness of the capsule. As the atmospheric pressure increases the capsule's volume of air gets compressed. To record this change in atmospheric pressure, one end of the capsule is fastened to a pointer by a series of levers and pulleys. As the volume of air inside the capsule changes, the pointer moves.

The U.S. National Weather Service reports air pressure at the earth's surface in inches of mercury (inch Hg). Air pressure above the earth's surface is reported in millibars, or hectopascals (hPa).

A barometer can also be used to show changes in altitude. Roughly, the barometer scale goes down three millibars for every twenty-five meters of ascent. In other words, if the barometer's scale reads 1020 millibars at sea level, and you travel 325 meters up a mountainside, the scale will read 980 millibars when you reach the top of the mountain.

Conversion table

Millibars/ Hectopascals	Inches	Millimeters
992	29.29	744.1
996	29.41	747.1
1000	29.53	750.1
1004	29.65	753.1
1008	29.77	756.1
1012	29.88	759.1
1016	30.00	762.1
1020	30.12	765.1
1024	30.24	768.1
1028	30.36	771.1
1032	30.48	774.1