level using an altimeter that we have adjusted manually to closely approximate sea level. This adjustment, known as an altimeter setting, already has been corrected for sea level.

Airport elevation is given in feet above sea level. The trick is for the pilot to get an accurate altimeter setting from someone on the ground at the destination airport. If someone at the airport issues the correct information from an accurate instrument, the pilot puts in the correct altimeter setting. If there are no fast-moving cold fronts in the area to play havoc with the pressure, the altimeter should show airport elevation as the airplane touches down.

Older altimeters had one diaphragm (aneroid) and one hand. Their entire range was perhaps only two revolutions of the instrument, and they were not very accurate. Modern altimeters, known as "sensitive altimeters," have two or three aneroids, as depicted in Figure 2-3. If you hold an altimeter over your head and read it, then put it on the floor and read it again, a person of average height will notice that the longest hand indicates a change of approximately five feet.

Of the three major types of altimeters—three-pointer, drum pointer, and counter pointer—the most common in light, general-aviation aircraft is the three-pointer (Figure 2-4, Figure 2-5, and Figure 2-6). On this instrument the longest hand registers 1000 feet per revolution, with each number around the dial equaling 100-foot increments. The wider but shorter hand registers 10,000 feet in one revolution, and each number signifies 1000 feet. The smallest hand would register 100,000 feet if it ever made a complete revolution; each number it points to is read $\times$ 10,000.

The one thing all altimeters have in common is their ability to be misread. Numerous accidents have resulted from altimeter misreading, particularly the 10,000-foot indicator. More than one pilot has been cleared to an altitude such as 12,000 feet, misread the altimeter by 10,000 feet, and ended up at 2000 instead!

Because the altimeter must be compensated for nonstandard atmospheric pressure, if it is to indicate the aircraft's true altitude, there must be some way to adjust it (temperature variation is automatically compensated for with an internal bimetallic strip). The pilot dials in the local altimeter setting, which adjusts the drive mechanism within the altimeter to compensate for nonstandard conditions. An entire generation of pilots has called this the Kollsman Window without knowing why; it was the Kollsman Instrument Company that invented the process. In fact, Kollsman is the unofficial granddaddy of altimeters, having invented the first reliable altimeter in 1928. All modern altimeters now have barometric pressure adjustments.

When the aircraft is at sea level in standard conditions (59 degrees Fahrenheit, 29.92 in. Hg.) the altimeter should read zero feet if it is set at 29.92 in. Hg. If the pressure drops to 29.42 in. Hg. and the pilot does not change the altimeter setting, the altimeter will indicate a slow climb to 500 feet ($29.92 - 29.42 = .50 \times 10$). A change of .01 in. Hg. = 10 feet; .10 in. Hg = 100 feet; 1.00 in. Hg. = 1,000 feet. Therefore, the pilot always should keep the altimeter set to a current source within 200 miles of the aircraft's present position and always update the altimeter for each point of intended landing.

The altimeter setting, though often called barometric pressure, is not the same thing available from a local weather station's barometer. Despite the same scale (in. Hg.) and occasionally similar readings, they are in fact different, and only an aviation altimeter setting should be used.