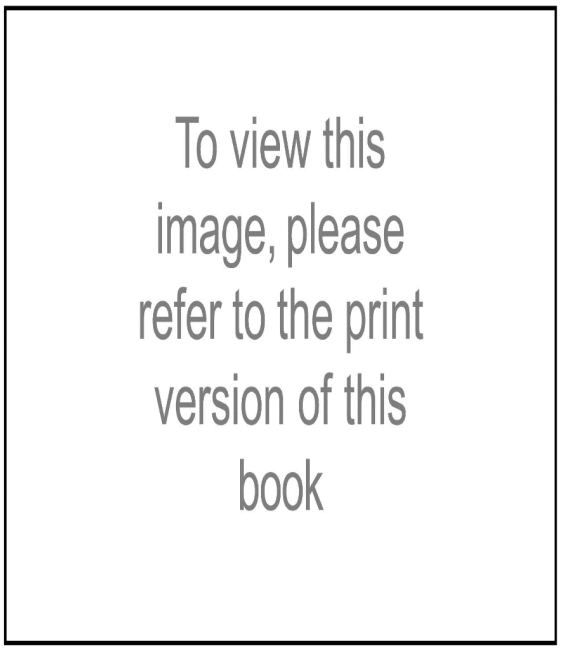

Fig. 8-7. *Testing the electrolyte's specific gravity with a hydrometer.*

From the list above it would appear the worst time to let a battery sit idle is the hot months. However, here again, Murphy's Second Law rears its ugly head. The chemical process involved performs a nasty little trick; it causes oxygen to enter the electrolyte and mix with the hydrogen already present. A quick trip to the old high school chemistry book assured me that water is the result. So, in winter, a discharging battery keeps adding pure water to the electrolyte, which, when exposed to freezing temperatures, means a cracked battery.

A fully charged battery with an SPGR of 1.285 would freeze at –90 degrees F, but a look at Table 8-4 reveals that a battery with a 1.100 SPGR has a freezing point of only 19 degrees F. The lesson to be learned is whenever you anticipate not flying regularly, you should remove the battery and store it in a cool place. In addition, approximately every five weeks it should be recharged to prevent a lead sulfate buildup on the plates. Lead sulfate (a crystalline formation) is a terrible conductor, which may prevent recharging and permanently damage the battery.

Battery Installation

When installing a new battery there are several important considerations, the most important of which is reading the manual supplied by the manufacturer. In all cases, follow the manual! Only a fully charged battery should be put into an airplane, and few, if any, batteries come fully charged. According to the Gill GSM-682 Service Manual, new batteries are received dry-charged and will deliver 75 percent of the rated capacity after the