Nevertheless, the prudent pilot will allow for fuel expansion when refueling during the warmer months.

Fuel lines, normally made of annealed aluminum alloy or copper, must be of sufficient diameter to allow double the required flow rate at takeoff power. They must be protected from excessive vibration and, where actually connected to the engine or airframe, flexible hosing is required. Wherever visible, hoses should be checked for chafing during preflight. While manufacturers try to route fuel lines away from exhaust manifolds and other hot areas, it is not always possible. Asbestos tape serves as heat protection and should also be checked on preflight.

Fuel Contamination

Water can enter a fuel tank in three ways: The first way is by the formation of condensation on the inside of partially filled tanks when outside air temperature drops. Topping off tanks after each flight eliminates this possibility.

The second way is for water to leak past the fuel filler cap, a problem that exists in particular when the aircraft has the type of recessed filler caps that form a cup in the wing. While some caps are only slightly recessed, such as the one illustrated in Figure 6-5, any recess at all will collect rain. To minimize this problem, inspect filler caps, seals, and ports every preflight. Also check for fuel stains trailing behind the filler cap. In flight, reduced pressure over the wing causes fuel to stream out of a leaking filler neck. If you see fuel streaks behind the filler, not only are you losing fuel in flight, but also you are likely to be collecting water in your tank when the aircraft is on the ground in the rain.

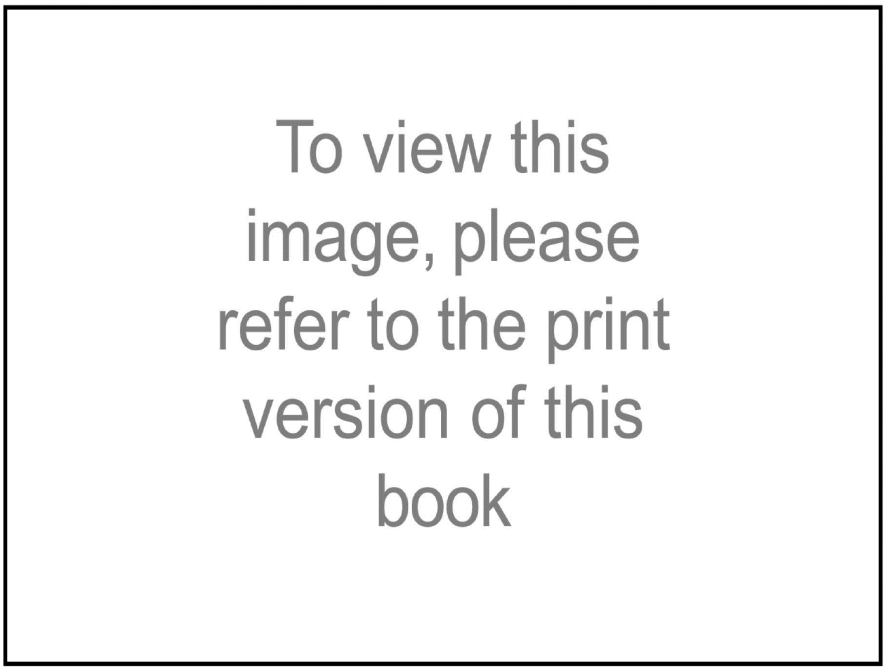

Fig. 6-5. *Recessed fuel filler cap in wing.* (Photo by author, courtesy of Frasca Air Services)