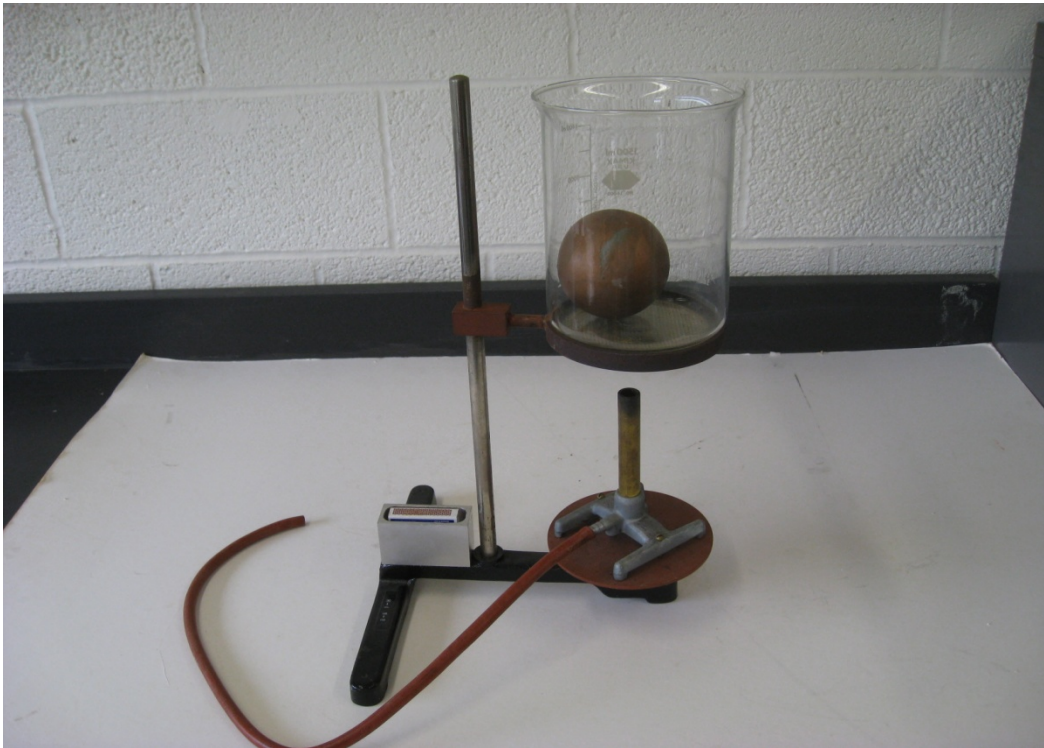


## HB-2

**Density of Water**  
Dependence Upon  
The Temperature  
H-1 S-2



Use special, hollow, copper ball the weight of which has been so adjusted that the ball will float in cold water (below roughly 20° C) and sink in hot water (above roughly 50° C).

Place ball in 1000-cc beaker, and fill beaker nearly full of cold water. (Tap water is usually sufficiently cold.) Set beaker on special stand, and note that the ball floats. Heat the water and note that, at a sufficiently high temperature, the ball sinks. Thus, over this range, the density of water decreases with rising temperature. (The copper ball expands some, but this in itself would provide a greater buoyancy force at the higher temperature.)

**Note 1:** Approximately a 10 – minute period is required to heat the water to a sufficiently high temperature to cause the ball to sink. The lecturer should therefore be prepared to proceed with something else during this interval.

**Note 2:** From the densities of water at 20° and 50° C, along with the volume of the ball, one can calculate that the difference of the buoyancy forces at the two temperatures is of the order of 1 gram force.