

4. Find the weight of a ball of gold 6 in. in diameter, if a cubic in. of gold weighs 19.34 grams.
5. The surface of a sphere is equal to half that of a similar cone; the radius of the base of the cone is 10 feet, and its height $\frac{1}{3}$ feet. Find the volume of the sphere.
6. A spherical shell is 9 in. in diameter and its thickness is 1 inch; find the volume of the shell.
7. The inner radius of a spherical shell is 9 in.; the thickness of the shell is $\frac{1}{4}$ inches; find its weight.
8. Find the weight of a shell $3\frac{1}{2}$ in. thick whose internal diameter is $17\frac{1}{2}$ in., if a cubic foot of the metal weighs 490 lbs.
9. A spherical shell, internal diameter 14 inches, is filled with water. Its contents are poured into a cylinder of equal radius whose internal radius is 14 in.; find the depth of the water in the cylinder.
10. The diameter of the base of a cone is 4 in. and its volume is equal to that of a spherical shell of equal thickness, the external diameter of which is 12 in. Find the height of the cone.
11. A sphere, whose diameter is 4 feet, is submerged in the water of a circular cistern of 2 feet diameter, the water being 9 feet in depth; how high will the water in the cistern rise?
12. Find how long it will take to fill a hemispherical tank of 16 feet in diameter, from a water supply by a pipe 6.2832 gal. of water per sq. ft. (i.e. ft. = $\frac{1}{2}$ gal.)

XIV—GENERAL PROBLEMS

1. A number of men and women entered a room and sitting at 25 tables each drank 12 glasses of wine; 4 men each drank 4 glasses of wine and 3 women each drank 3 glasses of wine.