2. The density of a substance being defined as the mass (weight) in grammes of 1 c. cm. of that substance, shew that the same number gives the density and the specific gravity of the substance.

3. An alloy is made of 80 c. cm. of a metal of sp. g. 19·3, 4 c. cm. of a metal of sp. g. 10·55, and 2 c. cm. of a metal of sp. g. 8·5; find the sp. g. of the alloy.

4. Equal volumes of copper (sp. g. 8·9), zinc (sp. g. 7·2) and tin (sp. g. 7·3) are taken to form an alloy; find the sp. g. of the alloy.

5. If 100 pounds of copper is drawn into 1 mile of wire, find the diameter of the wire, the specific gravity of copper being 8·9.

III

In the Centigrade thermometer the interval between the temperatures corresponding to the freezing and boiling points of water is divided into 100 degrees, and the points marking the intervals are numbered from 0 to 100; the same interval in Fahrenheit's thermometer is divided into 180 degrees, and the points are numbered from 32 to 212.

1. Find the readings of the Centigrade thermometer corresponding to the following readings Fahrenheit:

$$10°,\ 50°,\ 90°,\ 120°,\ -10°.$$

2. Find the readings of Fahrenheit's thermometer corresponding to the following readings Centigrade:

$$2°,\ 20°,\ 50°,\ -10°,\ -273°.$$

3. Express a pressure of 15 pounds on a square inch in grammes on a square centimetre.

Find a decimal multiplier which will convert pounds (pressure) on a square inch into grammes (pressure) on a square centimetre.

4. The pressure of the atmosphere is frequently given by the reading on a barometer, which indicates the height of a column of mercury which would give the same pressure. If the barometric reading is 29·5 inches, find the corresponding reading for a graduation in millimetres.

5. In the definition of the gallon occur the words: "*at the temperature of sixty-two degrees of Fahrenheit's thermometer, and with the barometer at thirty inches.*"

Find the equivalent measures for the Centigrade thermometer and a barometer graduated in millimetres.