* Kinetic Energy per Unit Volume of a Gas:

From expression of pressure of gas, we know that

$$P = \frac{1}{3} \rho c^2$$

$$= \frac{2}{3} \times \frac{1}{2} \rho c^2$$

$$= \frac{2}{3} \times E$$

where $E = \frac{1}{2} \rho c^2$ and is equal to the kinetic Energy per unit volume of the gas. ρ is the mass per unit volume. Hence, the pressure of a gas is numerically equal to two third of the mean kinetic energy of translation of a unit volume of molecules.