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A molecular beam passes through a chamber enclosing gas at low pressure. The emergent beam is measured on a Pirani gauge.

The question has been raised whether a collision in the classical sense has any meaning without specification of the angle of scattering considered. As a preliminary experiment it was determined that the molecules suffering very small deviations (less than a degree) were negligible in number.

The mean free path of H_2, He, N_2, O_2, molecules have been measured; in each case the values found are smaller (by several fold) than the values determined indirectly from kinetic theory. The difference is probably due to neglect of the persistence of velocity in the kinetic theory.

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