CHAPTER V

THE GAS LAWS AND THE MOLECULAR THEORY

It is not a very easy matter to weigh gases; hence, when we wish to determine their quantity, we generally do it by measuring their volumes. It needs only a little observation, however, to show that the volume of any particular quantity of gas does not always remain the same—unless it is hermetically sealed up—but that it varies with changes in temperature and pressure. These changes in volume are physical changes, and their study belongs to the science of physics; but a knowledge of them is of such great importance to chemists that we must very briefly review them here, though, for a detailed discussion of them, books on physics must be consulted.

The pressure of gas is usually measured, for scientific purposes, by means of a barometer and is expressed in millimeters of mercury, the average, or normal, pressure of the atmosphere at sea level being equivalent to 760 mm. of mercury and being called **Standard Pressure (S.P.)**. If, now, we measure the volume of a certain quantity of gas under this pressure, then double the pressure and measure the volume again, we find that the volume is half what it was before; and this is true of all variations in pressure and volume. Thus:

P.	V.
190 mm.	4
380 "	2
760 "	1
1520 "	$\frac{1}{2}$
3040 "	$\frac{1}{4}$