

of time between two instants, i. e., to compare one interval with another as to magnitude; and when we express the laws of the motions of bodies by reference to time, and thus seem to claim to be able to measure time, we are in reality only expressing the laws of the motions of bodies in terms of the contemporaneous motion of some one body.

The temperatures of bodies may be described by reference to any quantity which varies with temperature, as the volume of a body under constant pressure, or its pressure under constant volume. Thus the temperature of a body is usually described as being the same as that of the mercury in a thermometer when the apparent volume of the mercury has a specified value. Except for the difficulty of making thermometers which are exactly comparable, temperatures may be described in this way with as great precision as may be desired.

It is therefore possible, as it is also important, to compare the changes of volume, pressure, &c., of different bodies, involved in given changes of temperature. Changes of volume, pressure, &c., consequent upon the same change of temperature, may be called *co-thermal* changes, the term *co-thermal* having the same signification with respect to temperature as *contemporaneous* has with respect to time.

To facilitate the comparison of co-thermal changes, some one such change is chosen, and all others are expressed in terms of it. Usually the change chosen as standard is the change in the apparent volume of the mercury in the ordinary thermometer. And when the laws of the variation of the volume, pressure, etc., of bodies with temperature are expressed in terms of the co-thermal change in the apparent volume of the mercury of the thermometer; the laws of the variation of volume, pressure, etc., thus expressed, are said to be expressed in terms of temperature. They are no more really laws of variation in terms of temperature however than laws of the motions of bodies expressed in terms of the contemporaneous rotations of the earth are laws of their motions with respect to time. When we speak of them as laws of variation with respect to temperature, we assume, for the sake of a convenient terminology, that increments of the apparent

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