

CHAPTER VI.—SUPPLEMENTARY.

ON THERMOMETERS, AND THE MANNER OF EMPLOYING
THEM FOR THE REGISTRATION OF THE TEMPERA-
TURE OF THE AIR.

SECTION I.

ON ORDINARY MERCURIAL THERMOMETERS AND CERTAIN PROPERTIES
OF BODIES IN RELATION TO HEAT.

(62) **Measure of Temperature.**—To measure changes of temperature recourse is had to an easily recognized and easily measured effect of changes of temperature, namely, the expansion which is found to take place in most bodies on the application of additional heat; but as expansion differs in different substances, it is requisite that some one substance should be chosen for this purpose. An instrument furnished with a contrivance for measuring the expansion or contraction which accompanies changes of temperature *in the substance chosen as a standard*, is called a *thermometer*.

Mercury is the substance ordinarily used as a standard of reference for the construction of thermometers, chiefly because the *apparent** increase to the volume of mercury inclosed in a glass tube is proportional† to the increase of its temperature as measured on rigid principles, so that apparently equal additions to the volume of the mercury indicate equal additions to its temperature.

(63) **The Mercurial Thermometer.**—This instrument consists of a glass tube or stem with a fine or capillary bore, as nearly as possible uniform throughout, with a bulb at one end, whose capacity is largely in excess of that of the bore. The bulb and part of the stem are filled with mercury, and marks are placed on the stem to indicate the expansion and contraction caused by changes of temperature.

Before the mercury is introduced into the tube, the tube is calibrated, that is, it is ascertained that the bore is of uniform calibre, or that its cross sections are throughout of uniform area; and if not uniform, the

* The actual is not identical with the apparent increase, on account of the expansion of the glass.

† The proportionality is not absolutely perfect; but the error occasioned by regarding it as such is too minute to be worthy of consideration.