the interior volumes of the tube between the degree marks to the true change of volume corresponding to a change of one degree.

(76) Volatility of Alcohol.—A serious defect in spirit thermometers is that caused through the *volatility* of alcohol, by which portions are sometimes evaporated and condensed in the further end of the tube, thus causing the instrument to give readings too low, it may be, by several degrees.

To guard against the error thus produced, the readings should be frequently compared with those of a good mercurial thermometer; and if it is found that the spirit thermometer gives too low a reading, its tube should be carefully examined, in order that any portions of spirit, or "*blebs*," as they are called, that have been detached from the main body, may be re-united to it. To do this the thermometer may be swung about its upper end, bulb down, or jerked in the direction of its length, so as to break the adhesion of the spirit to the glass.

(77) Incidental Advantage of the large Expansion of Alcohol.—The large capacity which it is found necessary to give to the bore of a spirit thermometer, relatively to that of the bulb, to avoid a break in the column would necessitate a considerable contraction between the degree marks, were it not that the expansion of alcohol is more than five times that of mercury.

(78) Self-Registering Maximum Thermometer.—The object of this instrument is to give the highest temperature that has occurred within any given interval of time. It is not capable, however, of giving the *time* when the highest temperature occurred.

There are various kinds of maximum thermometers, but the instrument with which we are here concerned is that devised by Negretti & Zambra. In this instrument, which is a mercurial thermometer, the bore of the tube near the bulb is contracted or obstructed by the insertion of a piece of porcelain, such that, although the expansion of the mercury occasioned by a rise of temperature is sufficient to force the mercury upwards beyond the obstruction, the cohesion of the mercury is not sufficient to draw it back again when, in consequence of a fall of temperature, it contracts.

When the mercury forms an unbroken column the instrument is said to be *set*. If the temperature remains constant, or if it rises, the column will continue unbroken; but if the temperature falls, the mercury below the obstacle, as it contracts, will retreat into the bulb, leaving stationary