

**18** the proportional expansion, 0.000,010,509.03, or for \*expansion in one yard 0.000,378,325,08 of an inch for one degree of Fahrenheit's thermometer.

2. The *units of capacity measure* are the gallon for liquid, and the bushel for dry measure. The gallon is a vessel containing 58372.2 grains (8.3389 pounds avoirdupois) of the standard pound of distilled water, at the temperature of maximum density of water, the vessel being weighed in air in which the barometer is 30 inches at 62° Fahrenheit.

3. The *standard of weight* is the Troy pound, copied by Captain Kater in 1827 from the imperial troy pound for the United States Mint, and preserved in that establishment. The avoirdupois pound is derived from this; its weight being greater than that of the troy pound in the proportion of 7,000 to 5,760; that is, the avoirdupois pound is equivalent in weight to 7,000 grains troy. The pound is a standard at 30 inches of the barometer and 62° Fahrenheit's thermometer.

Further on, he recommends that the standards to be furnished to the counties by each of the States should consist of a standard of length, standards of liquid and of dry capacity measures, and a set of troy and avoirdupois weights, with suitable scales and beams, or balances, for testing the town standards.

1. The *standard of length* should be the *yard*, carefully copied from the United States standard yard. The bar to be longer than the scale to be placed upon it, so that the ends may project beyond the lines between which the yard is measured.

The scales of feet, inches of the first foot, and tenths of the first inch, and tenths of yard, with the first tenth divided into hundredths, should be marked upon the yard with fine strokes, transversely to the length; the principal divisions being marked by longer lines than the others. The bar should be a line measure, not cut to the length of the yard, because of the greater facility which it will afford for transferring the yard to other bars, by means of a small square, similar to the one accompanying the United States standard yards, with which the yards for the counties should likewise be provided; it will also allow of other yard measures being laid upon this, in order to compare their lengths and divisions more readily.

2. The *standards of liquid capacity measures* should be the *gallon*, containing 231 cubic inches, the half gallon, quart, pint, half pint, and gill, all to be made of brass. The body of the vessels to be made of sheet brass, one-tenth of an inch in thickness, thickened at the top by a band to one-fifth of an inch. The bottom to be made of cast brass, turned, since the effects of use, and of the comparisons if made with water, will make this necessary. The interior dimensions should be the same as the United States standards. The standards should be without handles, as they will be equally convenient for the purpose of comparing the town standards, and it will tend to prevent their being used for other purposes.

3. The *standards of dry measures* should consist of the *half bushel*, to contain 1075.21 cubic inches; the peck, the half peck and quarter peck. to be of a cylindrical form, made of stout sheet brass, one-tenth of an inch in thickness, and thickened at the top by a band, to one-fifth of an inch. The bottom also to be of stout sheet brass, one-fifth of an inch thick, and slightly concave, to prevent the spring in the bottom, which might occur if the bot-