

to counting. As a first preliminary towards effecting this, we fix on convenient *standards* of weight, dimension, time, &c., and invent contrivances for readily and correctly repeating them as often as we please, and counting how often such a standard unit is contained in the thing, be it weight, space, time, or angle, we wish to measure; and if there be a fractional part over, we measure this as a new quantity by aliquot parts of the former standard.

(119.) If every scientific inquirer observed only for his own satisfaction, and reasoned only on his own observations, it would be of little importance what standards he used, or what contrivances (if only just ones) he employed for this purpose; but if it be intended (as it is most important they should) that observations once made should remain as records to all mankind, and to all posterity, it is evidently of the highest consequence that all inquirers should agree on the use of a common standard, and that this should be one not liable to change by lapse of time. The selection and verification of such standards, however, will easily be understood to be a matter of extreme difficulty, if only from the mere circumstance that, to verify the permanence of one standard, we must compare it with others, which it is possible may be themselves inaccurate, or, at least, stand in need of verification.

(120.) Here we can only call to our assistance the presumed permanence of the great laws of nature, with all experience in its favor, and the strong impression we have of the general composure and steadiness of every thing relating to the gigantic mass we inhabit—"the great globe itself." In its uniform rotation on its axis, accordingly, we find a standard of time which nothing has ever given us reason to regard as subject to change, and which, compared with other periods which the revolutions of the planets about the sun afford, has demonstrably undergone none since the earliest history. In the dimensions of the earth, we find a natural unit of the measure of space, which possesses in perfection every quality that can be desired; and in its attraction com-