

*diameter* might be more advantageously substituted : but that we have good reason to believe the equator to be not strictly circular, but in some degree elliptic, the proportion of its greatest and least diameters not being yet precisely known, though very much nearer to equality than that of the equatorial and polar diameters. This however would not prevent its *mean* equatorial diameter from being assumed in preference to its circumference, were not the polar axis, for very obvious reasons, preferable to both. Of the latter, and indeed of all three (thanks to the elaborate geodesical surveys which have been made within the century last elapsed), we possess a knowledge so precise as to render them perfectly available for our purpose.

(9.) Of lengths which exist not marked by the dimensions of any material object, but which are defined by the nature of things and by physical relations, and which are susceptible of exact determination and of being marked off on a scale, and so of becoming materialized for practical reference ; there have been proposed only three which can be considered theoretically, and of these only one practically available. These are, 1st, the velocity of light or the space travelled over by light in some definite time (say the ten-millionth part of a second, which would give a modulus of about 100 feet) ; 2dly, the length of an undulation of a ray of light of some definite refrangibility—a length so minute as to require multiplication a million-fold to give a modular unit ; and 3dly, the length of a pendulum vibrating seconds under certain definite and normal circumstances—or rather