

INTRODUCTION.

v

It is one of the fundamental principles in *geography*, that the earth is of a round form ; for, from the scientific measurements that have been made in various countries, it is proved that its form is that of a sphere, slightly flattened at the poles, from the effect of its diurnal motion. The difference of the equatorial and polar diameters is now ascertained to be 26 miles, and the four hundred and seventy-eighth thousandth part of a mile ; or in the proportion of 298 to 299. This deviation from a true sphere is almost inappreciable in any representation of the earth's surface ; for in a globe of 16 inches in diameter, it would vary only in the proportion of one-twentieth part of an inch—a quantity too small to be regarded ; but in the actual measurement of any considerable portion of the earth's surface, this variation becomes more manifest from the inequality of the curve described by the polar circumference, while the degrees of latitude, which are always geographically divided into 60 miles, or minutes, the *measured length of a degree, increases with the latitude*, as the following table, resulting from the actual measurements, made with every refinement which science can command, by commissioners of various nations, men of the first eminence, will show.

COUNTRY.	Lat. of the middle of the Arc.	Length of a degree in feet.	Ditto in British statute miles.
Sweden	deg. m. s.		m. f. yds.
Russia	66 . 20 . 10	365,782	69 . 2 . 47
England	58 . 17 . 37	365,368	69 . 1 . 129
France	53 . 35 . 45	364,971	69 . 0 . 217
Ditto	46 . 52 . 2	364,872	69 . 0 . 184
Rome	44 . 51 . 2	364,535	69 . 0 . 75
North America, United States	42 . 59 . 0	364,262	68 . 7 . 200
Cape of Good Hope	39 . 12 . 0	363,786	68 . 7 . 42
India	33 . 18 . 30	363,713	68 . 7 . 17
Ditto	16 . 8 . 22	363,044	68 . 6 . 14
Peru	12 . 32 . 21	363,013	68 . 6 . 4
	1 . 31 . 0	362,808	68 . 5 . 156

In representation of the earth, its *surface* may also be considered as being smooth : its inequalities have been compared to those on the rind of an orange ; but even this is an exaggeration. The loftiest mountain is known not to exceed five miles in perpendicular height, and this is only 1-1600th part of the earth's diameter ; consequently, it must be represented, on a globe of 16 inches in diameter, by an elevation of 1-100th part of an inch, or the thickness of common drawing-paper ; but as the general elevation of the land is very much below this, or even one-fourth of it, it must be within the thickness of the thinnest writing-paper. The ocean, supposing its depth to be equal to the height of the land, would not appear more on a similar globe than the wash of colour left by a brush in tinting a drawing.

The greater or equatorial diameter is	41,847,426 feet, or 7925-648 miles.
The lesser, or polar diameter	41,707,620 " 7899-170 "
Difference of diameters, or polar compression	139,806 " 26-478 "
Equatorial circumference	24,899-000 "

MOTIONS OF THE EARTH.

The earth turns uniformly round, once in twenty-four hours, in a direction from west to east, upon an axis, which is an imaginary line passing through its centre : this is called its *diurnal motion*. It is likewise carried in the same direction round the sun, in an orbit nearly circular, and completes its revolutions in a year : this is called its *annual motion*. As some of the divisions of our globe, of great importance in geography, depend upon these motions, we will now consider them more particularly.