

## ON THE MOTION OF THE EARTH.

In order to conceive the Earth as in motion, we must form to ourselves a conception of its shape and size. Now an object cannot have shape and size unless it is limited on all sides by some definite outline, so as to admit of our imagining it, at least, disconnected from other bodies, and existing insulated in space. The first rude notion we form of the Earth is that of a flat surface, of indefinite extent in all directions from the spot where we stand; above which are the air and sky—below, to an indefinite profundity, solid matter. This is a prejudice to be got rid of, like that of the Earth's immobility; but it is one much easier to rid ourselves of, inasmuch as it originates only in our own mental inactivity, in not questioning ourselves where we will place a limit to a thing we have been accustomed, from infancy, to regard as immensely large; and does not, like that, originate in the testimony of our senses unduly interpreted. On the contrary, the direct testimony of our senses lies the other way. When we see the Sun set in the evening, in the west, and rise again in the east, as we cannot doubt that it is the same Sun we see after a temporary absence, we must do violence to all our notions of solid matter to suppose it to have made its way through the substance of the Earth. It must, therefore, have gone under it, and that not by a mere subterraneous channel; for, if we notice the points where it sets and rises, for many successive days, we shall find them constantly shifting round a very large extent of the horizon; and besides, the Moon and Stars also set and rise again in all points of the visible horizon. The conclusion is plain that the Earth cannot extend indefinitely in depth downwards, nor indefinitely in surface laterally; it must have not only bounds in a horizontal direction, but also an under side, round which the Sun, Moon, and Stars compass, and that side must be so far like what we see, that it must have a sky and sunshine, and a day when it is night to us. You are already acquainted with proofs of the Earth's rotundity;—but a question may occur: Do not the immense elevations and depressions on the Earth's surface render this peculiar form a chimera. By no means. The highest mountain known does not exceed five miles in perpendicular elevation; this is only one 1600th part of the Earth's diameter; consequently, on a globe of 16 inches in diameter, such a mountain would be represented by a protuberance of no more than 100th part of an inch, which is about the thickness of ordinary drawing paper. The deepest mine existing does not penetrate half a mile below the surface: a scratch or pin-hole duly representing it on the surface of such a globe as our model, would be imperceptible without a magnifier.

The Earth moves round the Sun in 365 days, 5 hours, and 49 minutes, at the distance of 95 millions of miles, and round its axis in about 24 hours. The former is called its annual, and the latter its diurnal motion. That the Earth is, in reality, a moving body, is a fact which can no longer be called in question,—it is, indeed, susceptible of the clearest demonstration. Either the Earth moves round its axis once in 24 hours, or the

Sun, Moon, Planets, Comets, Stars, and the whole frame of the Universe move round the Earth in the same time. There is no alternative or third opinion that can be formed on this point. If the Earth revolve on its axis every 24 hours to produce the alternate succession of day and night, the portions of its surface about the equator must move at the rate of more than a thousand miles each hour, since the Earth is more than 24000 miles in circumference. This view of the fact, when attentively considered, furnishes a most sublime and astonishing idea. That a globe of so vast dimensions, with all its load of mountains, continents, and oceans, comprising within its circumference a mass of 264,000,000,000 of cubical miles, should whirl round with so amazing a velocity, gives us a most august and impressive conception of the greatness of that Power which first set it in motion, and continues the rapid whirl from age to age!

Though the huge masses of the Alpine Mountains were in a moment detached from their foundation, carried aloft through the regions of the air, and tossed into the Mediterranean Sea, it would convey no idea of a force equal to that which is every moment excited, if the Earth revolve on its axis. But, should the motion of the Earth be called in question, or denied, the idea of force or power will be indefinitely increased. For, in this case, it must necessarily be admitted that the Heavens, with all the innumerable host of Stars, have a diurnal motion round our globe; which motion must be inconceivably more rapid than that of the Earth on the supposition of its motion. For, in proportion as the Celestial Bodies are distant from the Earth, in the same proportion would be the rapidity of their movements. To suppose the whole Universe moves round the Earth in the same time, would involve a reflection on the wisdom of its Almighty Author, and would form the only exception that we know to that beautiful proportion, harmony, and simplicity, which appears in all the works of nature.

It is recorded of the Astronomer, Alphonso, King of Castile, who lived in the 13th century, that, after having studied the Ptolemic system, which supposes the Earth at rest in the centre of the Universe, he uttered the following impious sentence—"If I had been of God's Privy Council when he made the world, I would have advised him better." So that false conceptions of the System of Nature lead to erroneous notions of that adorable Being who is possessed of infinite perfections.

With regard to the annual revolution of the Earth—if such a motion did not exist, the Planetary System would present a scene of inextricable confusion. The Planets would move sometimes backwards, sometimes forwards, and at other times remain stationary, and would describe looped curves, so anomalous and confused, that no man in his senses could view the all-wise Creator as the author of so much confusion. But, by considering the Earth as revolving in an orbit between Venus and Mars, (which all celestial observations completely demonstrate,) all the apparent irregularities of the Planetary motions are completely