

solved and accounted for ; and the Solar System presents a scene of beauty, harmony, and grandeur, combined with that simplicity of design, which characterizes all the works of Omnipotence.

But, before we proceed to examine more in detail how the hypothesis of the rotation of the Earth about an axis accords with the phenomena which the diurnal motion of the Heavenly Bodies offers to our notice, it will be proper to describe, with precision, in what that diurnal motion consists, and how far it is participated in by them all ; or whether any of them form exceptions, wholly or partially, to the common analogy of the rest. We will, therefore, suppose a person to station himself, on a clear evening, just after sunset, when the stars begin to appear, in some situation where a good view of the Heavens may be had. He will then perceive, above and around him, as it were, a vast, concave, hemispherical vault, beset with Stars of various magnitudes, of which the brightest only will first catch his attention in the twilight ; and more and more will appear as the darkness increases, till the whole sky is spangled with them. When he has thus a while admired the calm magnificence of this glorious spectacle, the theme of so much song and so much thought—a spectacle which none can view without emotion, and without a longing desire to know something of its nature and purport—let him fix his attention more particularly on a few of the most brilliant Stars, such as he cannot fail to recognise again, after looking away from them from some time, and let him refer their apparent situations to some surrounding objects. On comparing them again with their respective points of reference, after a moderate interval as the night advances, he will not fail to perceive that they have changed their places, and advanced, as by a general movement, in a westward direction. If he persists, for a considerable time, in watching their motions, on several successive nights, he will perceive that each Star appears to describe, as far as its course lies above the horizon, a circle in the sky. Some, which lie towards the south, only remain for a short time above the horizon, and disappear after describing, in sight, only the small upper segment of their diurnal circle ; others, which rise between the south and east, describe larger segments of their circles above the horizon, remain proportionally longer in sight, and set exactly as far to the westward of south as they were to the eastward. But the magnitude of the circles themselves diminish as we go northward—the greatest of all the circles being described by those which rise exactly in the east point. Carrying his eye northwards, he will notice, at length, Stars which, in their diurnal motion, just graze the horizon at its north point, or only dip below it for a moment : while others never reach it at all, but continue always above it, revolving in entire circles round one point called the Pole, which appears to be the common centre of all their motions, and which, alone in the whole hemisphere, may be considered immovable. Not that this point is marked by any Star—it is a purely imaginary centre ; but there is near it one bright Star, called the Pole Star, which is easily recognized

by the very small circle which it describes, or it may be known by its configuration with a very splendid and remarkable Constellation, called by Astronomers the Great Bear.

He will further observe that the apparent relative situations of all the Stars among one another is not changed by their diurnal motion. In whatever parts of their circles they are observed, or at whatever hour of the night, they form with each other the same identical groups to which the name of Constellations have been given. It is true that, in different parts of their course, these groups stand differently with respect to the horizon ; and those towards the north, when, in the course of their diurnal movement, they pass alternately above and below that common centre of motion described before, become actually inverted with respect to the horizon, while, on the other hand, they always turn the same points towards the Pole. In short, he will perceive that the whole assemblage of Stars visible at once, or in succession, in the Heavens, may be regarded as one great Constellation, which seems to revolve with a uniform motion, as if it formed one coherent mass, or as if it were attached to the internal surface of a vast hollow sphere, having the Earth, or rather the spectator, in its centre, and turning round an axis inclined to this horizon so as to pass through that fixed point or Pole already mentioned.

Lastly, he will notice, if he have patience to out-watch a long winter's night, that those Stars which he observed setting in the west, have again risen in the east, while those which were rising when he first began to notice them, have completed their course and are now set ; and that thus the hemisphere, or a great part of it, which was then above, is now beneath him, and its place supplied by that which was at first under his feet, which he will thus discover to be no less copiously furnished with Stars than the other, and adorned with groups no less permanent and distinctly recognisable. Thus he will learn that the great Constellation we have before spoken of as revolving round the Pole, is co-extensive with the whole surface of the sphere, being, in reality, nothing less than a universe of luminaries surrounding the Earth on all sides, and brought in succession before his view, and referred (each luminary according to its own visual ray or direction from his eye) to the imaginary spherical surface, of which he himself occupies the centre.

There is, however, one portion or segment of this sphere of which he will not thus obtain a view. As there is a segment towards the north, adjacent to the Pole above his horizon, in which the Stars never set, so there is a corresponding segment, about which the smaller circles of the more southern Stars are described, in which they never rise. The Stars which border upon the extreme circumference of this segment, just graze the southern point of his horizon and show themselves for a few moments above it, precisely as those near the circumference of the northern segment graze his northern horizon and dip for a moment below it to re-appear immediately. Every point in a spherical surface has, of course another diametrically opposite to it :