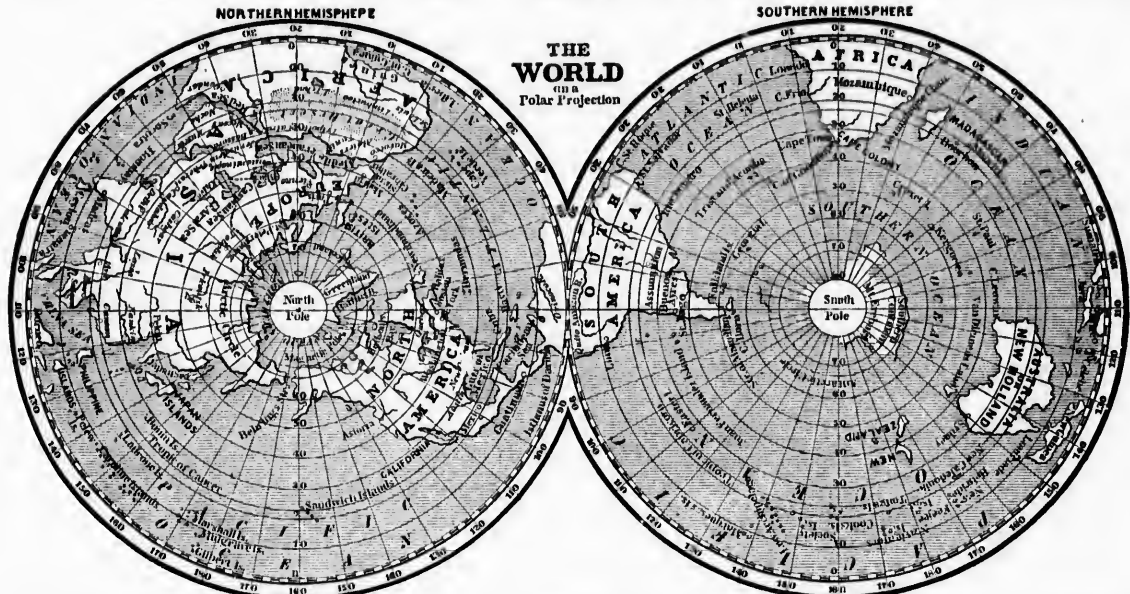




[To make these definitions of the different bodies of land and water more intelligible, the teacher may refer the pupil to rivers or brooks and ponds in his own vicinity, pointing out the little bays, peninsulas, rapids, isthmuses, islands, straits, &c., which there occur on a small scale, and asking questions respecting them till satisfied that the child thoroughly comprehends them.]



III. MOTIONS OF THE EARTH.

35. The earth or globe is about 8000 miles in diameter, and 25,000 in circumference.
36. The *diameter* of a globe is any straight line passing through the centre, and terminated by the surface on the opposite sides.
37. The *circumference* of a globe is any circle that passes wholly round it on the surface, and has the centre of the globe for its centre.
38. A *hemisphere* is the half of a globe.
39. The earth has two motions: first, it spins round on its axis, like a top, once every day; and, secondly, it moves round the sun once every year.



40. The *axis* of the earth is an imaginary straight line, passing through the centre, and around which it revolves once in every twenty-four hours.

41. The *poles* of the earth are the two ends of its axis: one is called the North Pole, and the other the South Pole.

42. The motion of the earth round its axis causes *day and night*. If the earth did not move round its axis, the half toward the sun would have constant day, and the other half constant night.

43. The motion of the earth round the sun, in connection with the inclination of the axis of the earth to the plane of its orbit, causes the *succession of the seasons*—Spring, Summer, Autumn, and Winter.

[To make the motions of the earth intelligible to the child, the teacher should show him a globe properly mounted; or, in the absence of a globe, he may use an apple, orange, or ball, with a straight wire passing through its centre. He may then explain, that the wire is the axis; that the axis is a diameter; that the two ends of the axis are the poles; and by placing a candle at a distance, and causing the ball to revolve around its axis, he can easily illustrate the phenomena of day and night, sunrise, sunset, and noon. To illustrate the succession of the seasons will be more difficult, and unless the child is of suitable age and capacity, it need not be attempted. If it should be attempted, the teacher will bear in mind that the axis of the earth is inclined to the plane of its orbit at an angle of $66^{\circ} 32'$; that in every part of its orbit the axis is parallel to itself, pointing at all times toward the North star, which is at an invariable distance in the heavens from every part of our solar system. He may then explain that those parts of the globe are hottest upon which the rays of the sun strike most directly; and he may show how much more directly those rays strike upon the northern hemisphere in midsummer than in midwinter. This is shown imperfectly, but still intelligibly, in the figure illustrating the seasons on the next page.]

Questions.—35. What is the size of the earth? 36. What is the diameter of a globe? 37. What is the circumference of a globe? 38. What is a hemisphere? 39. How many motions has the earth? 40. What is the axis of the earth? 41. What are the poles of the earth? 42. What is the effect of the motion of the earth round its axis? What if the earth did not move on its axis? 43. What causes the succession of the seasons?

IV. CIRCLES ON THE GLOBE.

44. The *equator* is an imaginary circle passing round the earth on the surface, and every where equally distant from the two poles.

45. The equator divides the earth into the *Northern* and *Southern hemispheres*; the Northern hemisphere embracing all between the equator and the North Pole, and the Southern hemisphere all between the equator and the South Pole.

46. *Meridians* are imaginary circles passing

through the poles of the earth, and cutting the equator at right angles.

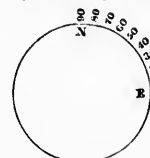
47. The *first meridian* is that from which longitude is reckoned.

48. The *Eastern* and *Western hemispheres* are the hemispheres into which the world is divided by a meridian passing between the Eastern and Western continents.

[The teacher may here point out the equator and meridian lines on a globe; or, if he has no globe, may pass a string round an apple or ball to represent the equator, and other strings at right angles to represent meridians; and may then cut the apple in two equal parts at the equator to show the Northern and Southern hemispheres, or in the direction of one of the meridians to show the Eastern and Western hemispheres.]

49. If a circle is divided into 360 equal parts, one of these parts is called a *degree*. If a degree is divided into 60 equal parts, one of these parts is called a *minute*; and the sixtieth part of a minute is called a *second*.

NOTE.—Degrees, minutes, and seconds are marked thus: $32^{\circ} 11' 26''$, which means 32 degrees, 11 minutes, and 26 seconds. In the following circle, the part from N. to E. being one quarter, is 90 degrees, and this part being subdivided into nine equal parts, each of these parts is 10 degrees.



50. The *tropics* are two circles on the globe parallel to the equator, at the distance of 23 degrees and 28 minutes, one on the north side of the equator, and the other on the south side.

NOTE.—*Parallel lines* or *circles* are lines or circles which run in the same direction, and keep at the same distance from each other, but never meet. In the figure below, the lines AB and CD are parallel lines, and the circles EFG and HIJ, parallel circles.

