axis, which is not changed: this is an imaginary line around which the earth revolves, producing day and night.

Now it is evident that the sun can diffuse its calorific rays over only that half of the globe turned to it; and the temperature of any place will be in proportion to the time during which it is thus exposed. Upon this self-evident principle we must found our explanation of the seasons.

When the earth is in the vernal equinox (A), the sun is vertical to the intersection of the equinoctial (F E), and the ecliptic (H G). In this position, therefore, the two poles will be the confines of the enlightened side, and the day and night will be equal all over the globe, for half the northern and half the southern hemisphere will be illuminated at the same moment. When the earth is situated in the autumnal equinox (C), the same effect is produced.

But we may suppose the earth to remove from the vernal equinox (A) to the summer solstice of the northern hemisphere (B). In this position, the space included within the arctic circle, which is a circle having the north pole for its centre, and 23° 38′ as a radius, is constantly enlightened, and it has consequently a perpetual day, while to the same distance round the south pole there must be constant night. Hence it follows, that at every place north of the equator the sun will be, at this time, longer above than below the horizon, and the length of time will be in proportion to the nearness of the place to the poles; the reverse is true of all places to the south of the equator.

When the earth comes to the winter solstice of the northern hemisphere (D), the south pole enjoys the constant day, and the north an unbroken night.

These are the facts deduced from a knowledge of the relative condition and motion of the earth as a member of the solar system; but it yet remains to be proved how these changes affect the temperature of places, causing all those variations called the seasons. The temperature of any place upon the earth's surface is chiefly governed by its exposure to the solar rays; the longer the sun is above the horizon of any place, the greater must be the amount of heat it receives, and the higher must its temperature be raised; so, also, the longer it is beneath the horizon, the greater must be the amount of heat it radiates. The equilibrium of temperature in any place is, therefore, supported by receiving and parting