

variations of our distance from the Sun have no influence upon the course of the seasons, for they are compensated by the simultaneous variations arising from the angular rapidity of the Earth. The spring and summer of the northern hemisphere, taken together, being seven days and a half longer than the spring and summer of the southern hemisphere, this inequality re-establishes the equilibrium between the total quantities of heat which the Earth receives from the Sun during these two intervals of time, since the longer interval corresponds to the greater distance of the Sun and the less intensity of the heat.

What is the mean distance—in other terms, what is the extent of space—which separates the Earth from the Sun? According to the old value of the Sun's parallax, it was estimated at 95,298,260 miles; but recent observations have proved that these figures are excessive. What is called the "new value," as obtained by Foucault and others, places the void between us and our life-giving luminary at 91,678,000 miles.

It is impossible to form an idea of such immense distances without suggesting to the mind some standard of comparison. To conceive the distance of the Earth from its great luminary, we must ask ourselves in what time it would be traversed under certain prescribed conditions.

A man walking on foot at the rate of  $4\frac{1}{2}$  miles an hour, and never resting day or night, would require 2000 years to reach the Sun. If he had started on his mysterious journey when Scipio was razing Carthage to the ground, he would, by this time, have just completed it. A locomotive at full speed, travelling at the rate of 38 miles an hour, would occupy three centuries in reaching its magnificent goal. A cannon ball, if it could preserve its initial velocity of 1500 feet per second, would require ten years. Sound would be fifteen years traversing the gulfs of space, if air existed in the void, and that air were of the same density as our terrestrial atmosphere. Finally, the most rapid of agents, light, which is commonly considered endowed with an almost instantaneous rapidity of transport, so that we say "swift as light" to describe the passage of a thought, would need eight minutes to penetrate from the Sun to the Earth.

The Earth, meanwhile, revolves in its orbit with astonishing speed. It yearly describes an elliptical path of upwards of 596 millions of miles; that is, 33,290 yards, or 19 miles in a second. Its swiftness is sixty times that of a cannon ball.