

extraordinary fact, that of the five or six distinct layers or strata which compose the solid crust of the earth, the lowermost, or granite, contains not a particle of animal or vegetable materials of any kind; the second, or transition formation, as Werner has denominated it, is filled, indeed, with fossil relics of animals, but of animals not one of which is to be traced in a living state at the present day; and it is not until we ascend to the third or *foetz* stratification that we meet with a single organic remain of known animal structures.—*Dr. Good.*

[Have any of these organic remains of unknown or antediluvian animals ever been found in Australia? With the single exception of Buenos Ayres, I do not recollect of any signs of an ancient world being found south of the southern tropic. Of this, however, I am not positive.—J. L.]

The sun is the great physical creator and dispenser of light and heat, and the supporter and modifier of animal life on our little planet. His bulk is to that of the earth, in round numbers, as 1,400,000 to 1; and his density or weight as about 355,000 to 1. Hence his influence upon the earth's surface must be immense and overwhelming. It is when in his perihelion, where his angular velocity is the greatest, and his disk the broadest, that he pours his direct rays upon the southern hemisphere.

"The sun's rays," says Herschell, "are the ultimate source of almost every motion which takes place on the surface of the earth.

"By its heat are produced all winds, and those disturbances in the ELECTRICAL EQUILIBRIUM of the atmosphere which give rise to the phenomena of terrestrial magnetism. \* \* \* \* \*

\* \* The change of longitude in twenty-four mean solar hours averages  $0^{\circ} 59' 8''.33$ ,—but about the 31st of December it amounts to  $1^{\circ} 1' 9''.9$ , and about the 1st of July to only  $0^{\circ} 57' 11''.5$ . Such are the extreme limits, and such the mean value of the sun's apparent angular velocity in its annual orbit."

Thus it appears that the apparent motion, or angular velocity of the sun in December, exceeds its velocity in July in the proportion of 36 to 34; and that the apparent diameter of its disk in December exceeds its diameter in July in the proportion of 32 to 31.

"The variation of the sun's *angular velocity*," continues Herschell, "is, then, much greater in proportion than that of its distance—fully twice as great. Hence we are led to conclude that the *angular velocity* is in the inverse proportion, not of the distance simply, but of the square of the distance. \* \* \* \* \*

"The fluctuation of the sun's distance, [about 3,000,000 of miles,] amounts to nearly  $\frac{1}{15}$ th of its mean quantity, and consequently, the fluctuation in the sun's direct heating power to double this, or  $\frac{1}{15}$ th of the whole."

Here let me ask, if the greater proximity of the sun, when in his perihelion, compensates for the seven or eight days annual absence from the southern hemisphere? This question has either been evaded, or answered in the affirmative by astronomers,—but how stands the fact? It has been said that "the greater proximity of the sun compensates exactly for his more rapid description, (or speed,) and thus an equilibrium of heat is, as it were, maintained. Were it not for this, the eccentricity of the earth's orbit would naturally influence the transition of the seasons."

A bare glance at the two hemispheres is sufficient to show the inaccuracy of the above statement. The greater comparative heat of the northern hemisphere is well known. The intense cold of the high southern latitudes, far exceeding the cold of the corresponding latitudes of the north, is a great annoyance to every navigator that has approached the confines or entered the limits of the antarctic or southern circle.