

*influences of solar action*, in as far as they are independent of the orbit and the position of the axis of our globe, has been clearly to demonstrate, by an exposition of the connection existing between great, and, at first sight, heterogeneous phenomena, how physical nature may be depicted in the *History of the Cosmos* as a whole, moved and animated by internal and frequently self-adjusting forces. But the waves of light not only exert a decomposing and recombining action on the corporeal world—they not only call forth the tender germs of plants from the earth, generate the green coloring matter (chlorophyll) within the leaf, and give color to the fragrant blossom—they not only produce myriads of reflected images of the Sun in the graceful play of the waves, as in the moving grass of the field, but the rays of celestial light, in the varied gradations of their intensity and duration, are also mysteriously connected with the inner life of man, his intellectual susceptibilities, and the melancholy or cheerful tone of his feelings. “*Cæli tristitiam discutit Sol et humani nubila animi serenat.*” (Plin., *Hist. Nat.*, ii., 6.)

In the description of each of the cosmical bodies, I shall precede whatever consideration of their physical constitution may (except in the case of the Earth) be necessary by their respective numerical data. The numerical arrangement of these results is nearly identical with that which was adopted by Hansen,\* in his admirable *Review of the Solar System*, although I have necessarily made some alterations and additions in the data, from the fact that 11 planets and 3 satellites have been discovered since 1837, the year in which Hansen wrote.

The mean distance of the center of the Sun from the Earth is, according to Encke's supplementary correction of the Sun's parallax (*Abhandlung der Berl. Akad.*, 1835, p. 309), 82,728,000 geographical miles, of which 60 go to an equatorial degree, and of which each one, according to Bessel's investigation of ten measurements of degrees (*Cosmos*, vol. i., p. 165), contains exactly 951,807 toises, or 5710·8405 Paris feet, or 6086·76 English feet.

Light requires for its passage from the Sun to the Earth, *i. e.*, to traverse the radius of the Earth's orbit, according to Struve's observations of aberration, 8' 17"·78 (*Cosmos*, vol. iii., p. 83); whence it follows that the Sun's true position is about 20"·445 in advance of its apparent place.

\* Hansen, in Schumacher's *Jahrbuch* for 1837, p. 65-141.