

monstrating," says Laplace, "that whatever be the masses of the planets, in consequence of the fact that they all move in the same direction, in orbits of small eccentricity, and slightly inclined to each other—their secular inequalities are periodical and included within narrow limits; so that the planetary system will only oscillate about a mean state, and will never deviate from it except by a very small quantity. The ellipses of the planets have been, and always will be, nearly circular. The ecliptic will never coincide with the equator, and the entire extent of the variation in its inclination cannot exceed three degrees."

There exists, therefore, it appears, in the solar system, a provision for the permanent regularity of its motions; and this provision is found in the fact that the orbits of the planets are nearly circular, and nearly in the same plane, and the motions all in the same direction, namely, from west to east.*

Now is it probable that the occurrence of these conditions of stability in the disposition of the solar system is the work of chance? Such a supposition appears to be quite inadmissible. Any one of the or-

* In this statement of Laplace, however, one remarkable provision for the stability of the system is not noticed. The planets Mercury and Mars, which have much the largest eccentricities among the old planets, are those of which the masses are much the smallest. The mass of Jupiter is more than two thousand times that of either of these planets. If the orbit of Jupiter were as eccentric as that of Mercury is, all the security for the stability of the system, which analysis has yet pointed out, would disappear. The earth and the smaller planets might in that case change their approximately circular orbits into very long ellipses, and thus might fall into the sun, and fly off into remote space.

It is further remarkable that in the newly discovered planets, of which the orbits are still more eccentric than that of Mercury, the masses are still smaller, so that the same provision is established in this case also. It does not appear that any mathematician has even attempted to point out a necessary connexion between the mass of a planet and the eccentricity of its orbit on any hypothesis. May we not then consider this combination of small masses with large eccentricities, so important to the purposes of the world, as a mark of provident care in the Creator?