than five seconds of a degree. But the most interesting result to which these investigations have led is the great truth, that, in spite of these perturbations, the permanence of the solar system is secured; nay, that these very disturbances are the means of preserving it from ruin. Formerly, astronomers thought they saw in the motions of the heavenly bodies a tendency to ruin. The moon, for instance, has been for thousands of years coming nearer and nearer the earth in every revolution; and the eccentricity of the earth's orbit has been diminishing, as has also the obliquity of the ecliptic to the equator. But it is now shown that all these irregularities are periodical; and that after having proceeded in one direction for a time, — it may be for hundreds, or thousands, or even millions of years, — they will reach a limit which they cannot pass, and oscillate in the opposite direction; and the limits of oscillation are too narrow seriously to affect the stability of the system or the comfort of its inhabitants. This demonstration, first wrought out by La Grange and La Place, and afterwards corrected by Bowditch, is one of the proudest achievements of modern science, and proves that our system, in itself considered, is eternal.

But a question has long been agitated whether all space is not occupied with very thin and subtle matter, which must offer a resistance to the motions of the heavenly bodies, and bring the system to ruin at last. And modern astronomical discoveries seem nearly to have settled this question in the affirmative. The universal diffusion of light, heat, and electricity, especially if the undulatory theory of light be true, render such an opinion probable. But the observations that have been made upon what is called Encke's comet, which revolves round the sun in three and a half years, make it almost certain that this medium does exist. That comet,