tected, in the planetary theory such an inequality, hitherto unnoticed, arising from the mutual attraction of Venus and the Earth. Its whole effect on the earth's longitude, would be to increase or diminish it by nearly three seconds of space, and its period is about 240 years. "This term," he adds, "accounts completely for the difference of the secular motions given by the comparison of the epochs of 1783 and 1821, and by that of the epochs of 1801 and 1821."

Many excellent Tables of the motions of the sun, moon, and planets, were published in the latter part of the last century; but the Bureau des Longitudes which was established in France in 1795, endeavored to give new or improved tables of most of these motions. Thus were produced Delambre's Tables of the Sun, Burg's Tables of the Moon, Bouvard's Tables of Jupiter, Saturn, and Uranus. The agreement between these and observation is, in general, truly marvellous.

We may notice here a difference in the mode of referring to observation when a theory is first established, and when it is afterwards to be confirmed and corrected. It was remarked as a merit in the method of Hipparchus, and an evidence of the mathematical coherence of his theory, that in order to determine the place of the sun's apogee, and the eccentricity of his orbit, he required to know nothing besides the lengths of winter and spring. But if the fewness of the requisite data is a beauty in the first fixation of a theory, the multitude of observations to which it applies is its excellence when it is established; and in correcting Tables, mathematicians take far more data than would be requisite to determine the elements. For the theory ought to account for *all* the facts: and since it will not do this with mathematical rigor (for observation is not perfect), the elements are determined, not so as to satisfy any selected observations, but so as to make the whole mass of error as small as possible. And thus, in the adaptation of theory to observation, even in its most advanced state, there is room for sagacity and skill, prudence and judgment.

In this manner, by selecting the best mean elements of the motions of the heavenly bodies, the observed motions deviate from this mean in the way the theory points out, and constantly return to it. To this general rule, of the constant return to a mean, there are, however, some apparent exceptions, of which we shall now speak.