

tion of the Node of the Moon's orbit, coinciding exactly with one which had been found to appear in the observations.

Nothing can more strikingly exhibit the confirmation which increased scrutiny brings to light between the Newtonian theory on the one hand, and the celestial motions on the other. We have here a very large mass of the best observations which have ever been made, systematically examined, with immense labor, and with the set purpose of correcting at once all the elements of the Lunar Tables. The corrections of the elements thus deduced imply of course some error in the theory as previously developed. But at the same time, and with the like determination thoroughly to explore the subject, the theory is again pressed to yield its most complete results, by the invention of new and powerful mathematical methods; and the event is, that residual errors of the old Tables, several in number, following the most diverse laws, occurring in several detached parts, agree with the residual results of the Theory thus newly extracted from it. And thus every additional exactness of scrutiny into the celestial motions on the one hand and the Newtonian theory on the other, has ended, sooner or later, in showing the exactness of their coincidence.

The comparison of the theory with observation in the case of the motions of the Planets, the motion of each being disturbed by the attraction of all the others, is a subject in some respects still more complicated and laborious. This work also was undertaken by the same indefatigable astronomer; and here also his materials belonged to the same period as before; being the admirable observations made at Greenwich from 1750 to 1830, during the time that Bradley, Maskelyne, and Pond were the Astronomers Royal.<sup>2</sup> These Planetary observations were deduced, and the observed places were compared with the tabular places: with Lindenau's Tables of Mercury, Venus, and Mars; and with Bouvard's Tables of Jupiter, Saturn, and Uranus; and thus, while the received theory and its elements were confirmed, the means of testing any improvement which may hereafter be proposed, either in the form of the theoretical results or in the constant elements which they involved, was placed within the reach of the astron-

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<sup>2</sup> The observations of stars made by Bradley, who preceded Maskelyne at Greenwich, had already been discussed by Bessel, a great German astronomer; and the results published in 1818, with a title that well showed the estimation in which he held those materials: *Fundamenta Astronomiæ pro anno 1775, deducta ex Observationibus viri incomparabilis James Bradley in specula Astronomica Grenovicensi per annos 1750-1762 institutis.*