

apogee, which period is performed in somewhat less than nine years." He found the agreement very remarkable, and conceived hopes of attaining the great object, of finding the Longitude with the requisite degree of exactness; nor did he give up his labors on this subject till he had completed his Plinian period in 1739.

The accuracy with which Halley conceived himself able to predict the moon's place¹² was within two minutes of space, or one fifteenth of the breadth of the moon herself. The accuracy required for obtaining the national reward was considerably greater. Le Monnier pursued the idea of Halley.¹³ But before Halley's method had been completed, it was superseded by the more direct prosecution of Newton's views.

We have already remarked, in the history of analytical mechanics, that in the Lunar Theory, considered as one of the cases of the Problem of Three Bodies, no advance was made beyond what Newton had done, till mathematicians threw aside the Newtonian artifices, and applied the newly developed generalizations of the analytical method. The first great apparent deficiency in the agreement of the law of universal gravitation with astronomical observation, was removed by Clairaut's improved approximation to the theoretical Motion of the Moon's Apogee, in 1750; yet not till it had caused so much disquietude, that Clairaut himself had suggested a modification of the law of attraction; and it was only in tracing the consequences of this suggestion, that he found the Newtonian law of the inverse square to be that which, when rightly developed, agreed with the facts. Euler solved the problem by the aid of his analysis in 1745,¹⁴ and published Tables of the Moon in 1746. His tables were not very accurate at first;¹⁵ but he, D'Alembert, and Clairaut, continued to labor at this object, and the two latter published Tables of the Moon in 1754.¹⁶ Finally, Tobias Mayer, an astronomer of Göttingen, having compared Euler's tables with observations, corrected them so successfully, that in 1753 he published Tables of the Moon, which really did possess the accuracy which Halley only flattered himself that he had attained. Mayer's success in his first Tables encouraged him to make them still more perfect. He applied himself to the mechanical theory of the moon's orbit; corrected all the coefficients of the series by a great number of observations; and in 1755, sent his new Tables to London as worthy to claim the prize offered for the discovery of longitude. He died soon after

¹² *Phil. Trans.* 1731, p. 195.

¹³ Bailly, *A. M.* c. 131.

¹⁴ *Lal.* 1460.

¹⁵ Bradley's Correspondence.

¹⁶ *Lal.* 1460.