In the first edition of the *Principia* in 1687, Newton had not given any calculations of new inequalities affecting the longitude of the moon. But in David Gregory's *Elements of Physical and Geometrical Astronomy*, published in 1702, is inserted[2] "Newton's Lunar Theory as applied by him to Practice;" in which the great discoverer has given the results of his calculations of eight of the lunar Equations, their quantities, epochs, and periods. These calculations were for a long period the basis of new Tables of the Moon, which were published by various persons;[3] as by Delisle in 1715 or 1716, Grammatici at Ingoldstadt in 1726, Wright in 1732, Angelo Capelli at Venice in 1733, Dunthorne at Cambridge in 1739.

Flamsteed had given Tables of the Moon upon Horrox's theory in 1681, and wished to improve them; and though, as we have seen, he would not, or could not, accept Newton's doctrines in their whole extent, Newton communicated his theory to the observer in the shape in which he could understand it and use it:[4] and Flamsteed employed these directions in constructing new Lunar Tables, which he called his *Theory*.[5] These Tables were not published till long after his death, by Le Monnier at Paris in 1746. They are said, by Lalande,[6] not to differ much from Halley's. Halley's Tables of the Moon were printed in 1719 or 1720, but not published till after his death in 1749. They had been founded on Flamsteed's observations and his own; and when, in 1720, Halley succeeded Flamsteed in the post of Astronomer Royal at Greenwich, and conceived that he had the means of much improving what he had done before, he began by printing what he had already executed.[7]

But Halley had long proposed a method, different from that of Newton, but marked by great ingenuity, for amending the Lunar Tables. He proposed to do this by the use of a cycle, which we have mentioned as one of the earliest discoveries in astronomy;—the Period of 223 lunations, or eighteen years and eleven days, the Chaldean

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[2] P. 332. [3] Lalande, 1457. [4] Baily. *Account of Flamsteed*, p. 72.
[5] P. 211. [6] Lal. 1459.

[7] Mr. Baily* says that Mayer's *Nouvelles Tables de la Lune* in 1458, published upwards of fifty years after Gregory's *Astronomy*, may be considered as the first lunar tables formed *solely* on Newton's principles. Though Wright in 1732 published *New and Correct Tables of the Lunar Motions according to the Newtonian Theory*, Newton's rules were in them only partially adopted. In 1735 Leadbetter published his *Uranoscopia*, in which those rules were more fully followed. But these *Newtonian Tables* did not supersede Flamsteed's Horroxian Tables, till both were supplanted by those of Mayer.

* *Supp.* p. 702.