

[2d Ed.] [I do not see any reason to retract what was thus said; but it ought perhaps to be distinctly said that on these very accounts Flamsteed's rejection of Newton's rules did not imply a denial of the doctrine of gravitation. In the letter above quoted, Flamsteed says that he has been employed upon the Moon, and that "the heavens reject that equation of Sir I. Newton which Gregory and Newton called his sixth: I had then [when he wrote before] compared but 72 of my observations with the tables, now I have examined above 100 more. I find them all firm in the same, and the seventh [equation] too." And thereupon he comes to the determination above stated.

At an earlier period Flamsteed, as I have said, had received Newton's suggestions with great deference, and had regulated his own observations and theories with reference to them. The calculation of the lunar inequalities upon the theory of gravitation was found by Newton and his successors to be a more difficult and laborious task than he had anticipated, and was not performed without several trials and errors. One of the equations was at first published (in Gregory's *Astronomice Elementa*) with a wrong sign. And when Newton had done all, Flamsteed found that the rules were far from coming up to the degree of accuracy which had been claimed for them, that they could give the moon's place true to 2 or 3 minutes. It was not till considerably later that this amount of exactness was attained.

The late Mr. Baily, to whom astronomy and astronomical literature are so deeply indebted, in his *Supplement to the Account of Flamsteed*, has examined with great care and great candor the assertion that Flamsteed did not understand Newton's Theory. He remarks, very justly, that what Newton himself at first presented as his Theory, might more properly be called *Rules* for computing lunar tables, than a physical *Theory* in the modern acceptance of the term. He shows, too, that Flamsteed had read the *Principia* with attention.⁹ Nor do I doubt that many considerable mathematicians gave the same imperfect assent to Newton's doctrine which Flamsteed did. But when we find that others, as Halley, David Gregory, and Cotes, at once not only saw in the doctrine a source of true formulæ, but also a magnificent physical discovery, we are obliged, I think, to make Flamsteed, in this respect, an exception to the first class of astronomers of his own time.

Mr. Baily's suggestion that the annual equations for the corrections of the lunar apogee and node were collected from Flamsteed's tables

⁹ *Supp.* p. 601.