

inversely as the square of the distance, in 1679, upon occasion of his correspondence with Hooke. In 1684, at Halley's request, he returned to the subject, and in February, 1685, there was inserted in the Register of the Royal Society a paper of Newton's (*Isaaci Newtoni Propositiones de Motu*) which contained some of the principal Propositions of the first two Books of the *Principia*. This paper, however, does not contain the Proposition "Lunam gravitare in terram," nor any of the other propositions of the third Book. The *Principia* was printed in 1686 and 7, apparently at the expense of Halley. On the 6th of April, 1687, the third Book was presented to the Royal Society.]

It does not appear, I think, that before Newton, philosophers in general had supposed that terrestrial gravity was the very force by which the moon's motions are produced. Men had, as we have seen, taken up the conception of such forces, and had probably called them gravity: but this was done only to explain, by analogy, what *kind* of forces they were, just as at other times they compared them with magnetism; and it did not imply that terrestrial gravity was a force which acted in the celestial spaces. After Newton had discovered that this was so, the application of the term "gravity" did undoubtedly convey such a suggestion; but we should err if we inferred from this coincidence of expression that the notion was commonly entertained before him. Thus Huyghens appears to use language which may be mistaken, when he says,⁶ that Borelli was of opinion that the primary planets were urged by "gravity" towards the sun, and the satellites towards the primaries. The notion of terrestrial gravity, as being actually a cosmical force, is foreign to all Borelli's speculations.⁷ But Horrox, as early as 1635, appears to have entertained the true view on this subject, although vitiated by Keplerian errors concerning the connection between the rotation of the central body and its effect on the body which revolves about it. Thus he says,⁸ that the emanation of the earth carries a projected stone along with the motion of the earth, just in the same way as it carries the moon in her orbit; and that this force is greater on the stone than on the moon, because the distance is less.

The Proposition in which Newton has stated the discovery of which we are now speaking, is the fourth of his third Book: "That the moon gravitates to the earth, and by the force of gravity is perpetually de-

⁶ *Cosmotheros*, l. 2. p. 720.

⁷ I have found no instance in which the word is so used by him.

⁸ *Astronomia Kepleriana defensa et promota*, cap. 2. See further on this subject in the *Additions* to this volume.