problem of the precession; and in 1752, a memoir which he entitled, *Discovery of a New Principle of Mechanics*, and which contains a solution of the general problem of the alteration of rotary motion by forces. D'Alembert noticed with disapprobation the assumption of priority which this title implied, though allowing the merit of the memoir. Various improvements were made in these solutions; but the final form was given them by Euler; and they were applied to a great variety of problems in his *Theory of the Motion of Solid and Rigid Bodies*, which was written[11] about 1760, and published in 1765. The formulæ in this work were much simplified by the use of a discovery of Segner, that every body has three axes which were called Principal Axes, about which alone (in general) it would permanently revolve. The equations which Euler and other writers had obtained, were attacked as erroneous by Landen in the Philosophical Transactions for 1785; but I think it is impossible to consider this criticism otherwise than as an example of the inability of the English mathematicians of that period to take a steady hold of the analytical generalizations to which the great Continental authors had been led. Perhaps one of the most remarkable calculations of the motion of a rigid body is that which Lagrange performed with regard to the *Moon's Libration;* and by which he showed that the Nodes of the Moon's Equator and those of her Orbit must always coincide.

10. *Vibrating Strings.*—Other mechanical questions, unconnected with astronomy, were also pursued with great zeal and success. Among these was the problem of a vibrating string, stretched between two fixed points. There is not much complexity in the mechanical conceptions which belong to this case, but considerable difficulty in reducing them to analysis. Taylor, in his *Method of Increments*, published in 1716, had annexed to his work a solution of this problem; obtained on suppositions, limited indeed, but apparently conformable to the most common circumstances of practice. John Bernoulli, in 1728, had also treated the same problem. But it assumed an interest altogether new, when, in 1747, D'Alembert published his views on the subject; in which he maintained that, instead of one kind of curve only, there were an infinite number of different curves, which answered the conditions of the question. The problem, thus put forward by one great mathematician, was, as usual, taken up by the others, whose names the reader is now so familiar with in such an association. In

[11] See the preface to the book.