Prop. XXIV. **It is not possible to determine the center of oscillation for pendula suspended between cycloids, and how to overcome the difficulty which this causes.**

If one very closely compares what we have demonstrated above concerning pendula suspended between cycloids with our discussion of the center of oscillation, he will see that these oscillations fall short of the perfect equality which we would prefer. First he will have doubts, in determining the generating circle of a cycloid, as to whether the length of the pendulum should be measured from the point of suspension to the center of gravity of the attached lead weight or to the center of oscillation.... If we say that that length should be measured to the center of oscillation, then it will not be clear how what was proven about the center of oscillation applies to a pendulum which is continually changing its length, as is the case for a pendulum which moves between cycloids. For it would seem that its center of oscillation changes for each different length....

However, if we wish to escape these problems completely, we can succeed if we make the sphere or lentil of the pendulum move around its own horizontal axis. This is done by inserting both ends of that axis into the bottom of the rod of the pendulum; the rod having been split in half for the purpose. For in this way the nature of motion is such that the sphere of the pendulum will maintain perpetually the same position in respect to the horizontal plane; and any point in it, as well as its center, will cross the same cycloids. Hence a consideration of the centers of oscillation is no longer relevant. Such a pendulum will maintain an equality of times which is no less perfect than if all of its weight were contained in one point.