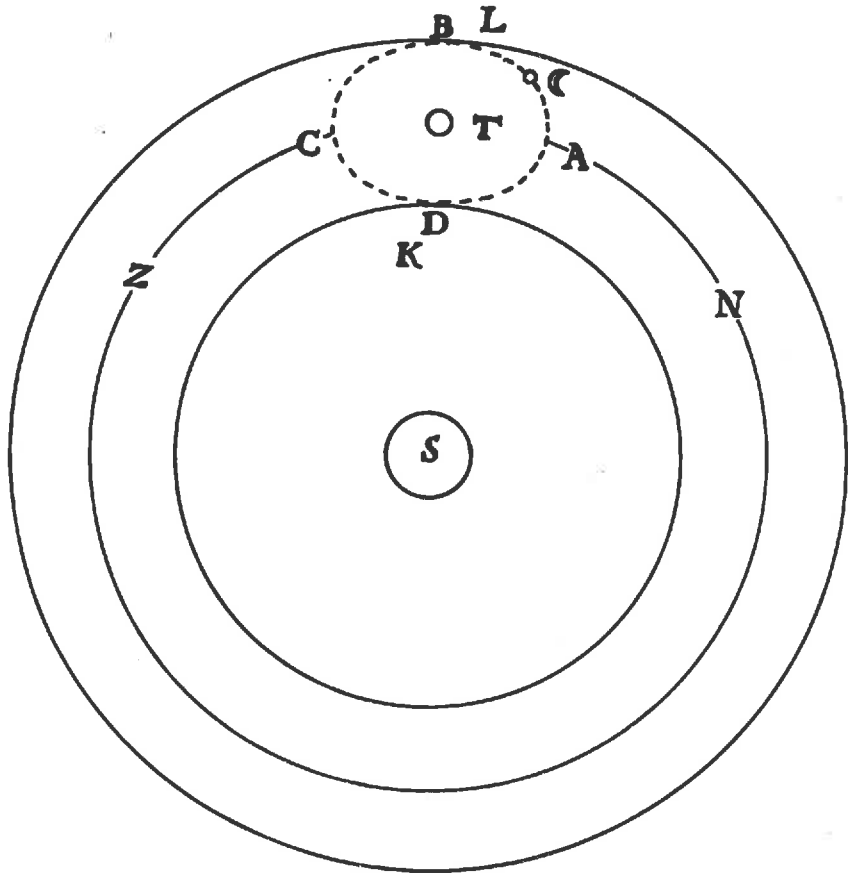


### **III.33. How the Earth is moved around its own center and the Moon around the Earth.**

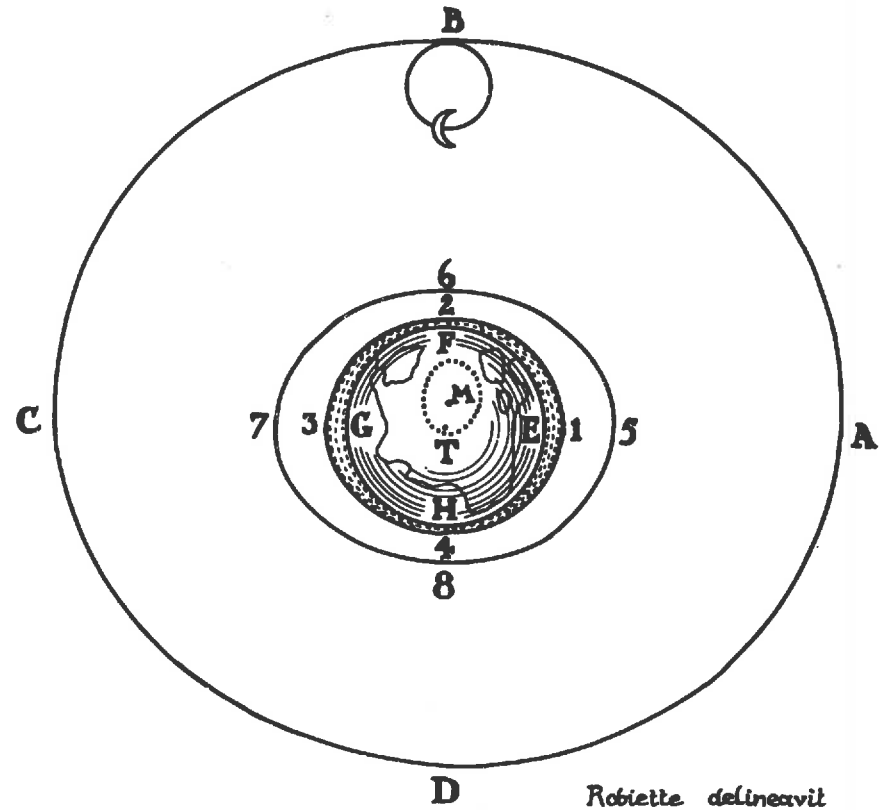
**In addition, in the great vortex which forms a heaven {having the Sun at its center}, there are other smaller ones which we can compare to those I have often seen in eddies of rivers where they {all follow the current of the larger vortex which carries them, and} move in the direction in which it moves. One of these vortices has Jupiter at its center, and moves with it the four satellites which revolve around Jupiter.... Similarly, the vortex which has the Earth at its center carries the Moon around the Earth in the space of a month, while the Earth turns on its axis in the space of twenty-four hours.**

Plate XV



Robiette delineavit

Plate XIX



Robiette delineavit

**III,42-44. ... And we shall know that we have correctly determined these causes when we observe that we can explain (*explicari*), by their means, not only those phenomena which we have considered up to now, but also everything else about which we have not previously thought.**

**... I wish what I shall write later to be taken only as an hypothesis {which is perhaps very far from the truth}. But, even though these things may be thought to be false, I shall consider that I have achieved a great deal if all the things which are deduced from them are entirely in conformity with the phenomena: for, if this comes about, my hypothesis will be useful to life as if it were true {because we will be able to use it in the same way to dispose natural causes to produce the effects we desire}.**

**Letter to Morin, 13 July 1638. ... You say ‘the phenomena of the heavenly movements can be deduced with no less certainty from the assumption that the earth is stationary than from the assumption that it moves.’ I agree readily. ... You say also that there is a vicious circle in proving effects from a cause and then proving the cause by the same effects. I agree: but I do not agree that it is circular to explain effects by a cause, and then prove the cause by the effects: because there is a big difference between *proving* and *explaining*. I should add also that the word ‘demonstrate’ can be used to signify either, if it is used according to common usage and not in the technical philosophical sense....**

**Finally, you say that nothing is easier than to fit a cause to an effect. It is true that there are many effects to which it is easy to fit many separate causes; but it is not always so easy to fit a single cause to many different effects, unless it is the true cause which produces them.**