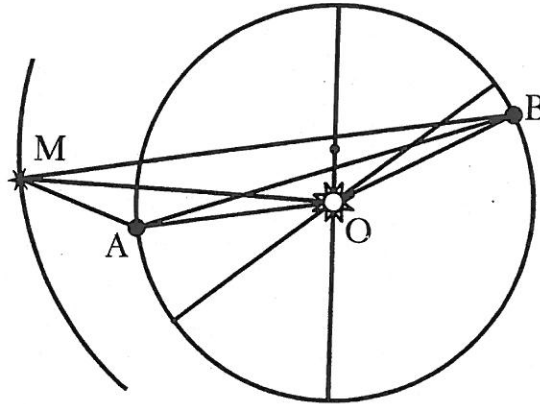


## Triangulating Distances of Mars On Either Side of Aphelion

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So, according to this method, these distances were found:

Aphelial	166,510	And where 152,342 becomes 100,000,
Perihelial	138,173	14169 becomes 9301.
Diameter	<u>304,683</u>	
Semidiameter	<u>152,342</u>	
Eccentricity	14,169	

Nevertheless, because our observations, especially at perigee, do not bear out that great a difference, and since it can happen that the vicarious hypothesis, since it is false, also might introduce some falsity into the eccentricity, all the votes should be counted before the result is announced.

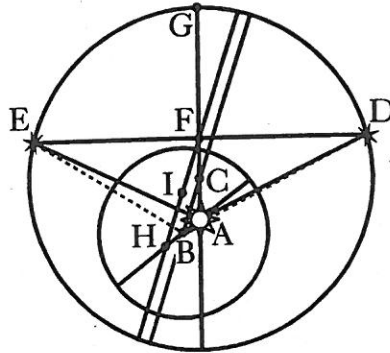
And so we shall adapt the aphelial distance found here, 166,510, to the eccentricity of ch. 42, which was 9265. And as 109,265 is to 90,735, so is 166,510 to 138,274, where the radius is about 152,400.

Also, manifest experience has shown that the eccentricity that is most true and best fitted to the physical equations is between 9230 and 9300; that is, the eccentricity of chapter 42, which is 9265.

Therefore, that we might not excessively abandon the perihelial distance found in this chapter, which is 138,173, nor put too much trust in the aphelial distance of 166,510, let us conclude that the truest aphelial is 166,465, and the perihelial, 138,234, where the radius is 152,350.

## Using Triangulated Distances to Verify Line of Apsides Through True Sun

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For the peculiar strength of the method I have used is this: that it shows that whatever point in the plane of the earth's circle is chosen that has a determinate position with respect to the sun's body, both in zodiacal longitude and in distance from the sun, described through a number of observations, also shows the distance of earth and Mars from that chosen point; and it does these things without any knowledge of the equated anomaly on the eccentric corresponding to that point. In fact, the only reason why I used that knowledge in chapter 26 was that it is a short cut.

But in addition, there is another way to argue the point. It was proved in chapter 44 above that the planet's orbit is not a circle but an oval, such that the diameter on it which is called the [line] of apsides is the longest. Just now, in ch. 51, it was proved that regions that are equally removed from the point of the aphelion G also make an equal incursion at the sides. There is thus a real oval situated about the line AC, and therefore, it is not situated about the line FH. And one who would compute the various distances of Mars from the point H by the method just recommended will find a great irregularity in the distances, incapable of being included by any means in a circle or in any other possible figure set up about FH.

So again the faith that was pledged in chapter 6 and in many other places in this work, I have redeemed from all tincture of self-justification, and have shown that the eccentric of Mars cannot be referred to anything but the sun itself; and that, in addition, it is not only reason that stands with me, but the observations themselves, in my releasing the observations of Mars from the sun's mean motion and measuring them out by the apparent motion of the sun.