

On the Flat Earth, How High is the Sun?

by Dave Thomas

NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR

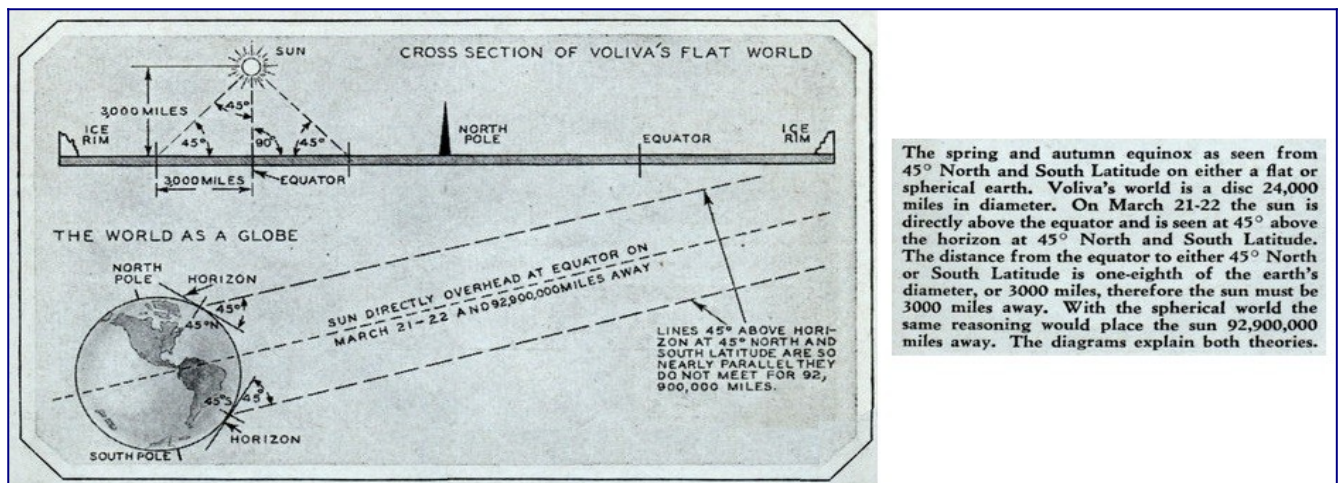
On this page, the height of the sun in various Flat Earth models are examined. We shall see that there are many techniques, with many answers. Sometimes, the exact same techniques have been used to find a multiplicity of results. About the best one can say is that the sun's height is between zero and 4,000 miles in most Flat Earth models.

I have heard of models where the Sun is only 300 miles high, or changes altitude with time of day or season of year. If you have a citation for such a Flat Earth model, or any model not discussed here, PLEASE [send it to me!](#)

Voliva Model Results

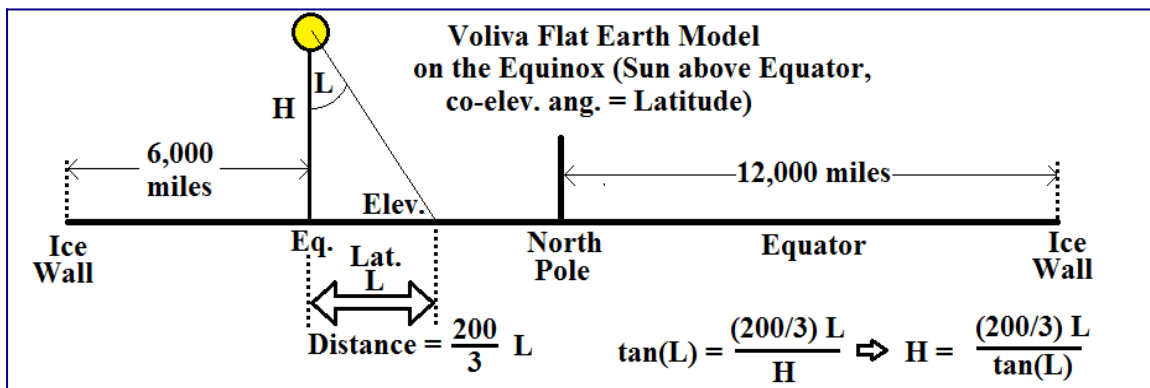
Wilbur Glenn [Voliva](#) (1870-1942) was the first radio evangelist, and a major proponent of the Flat Earth, offering \$5000 for anyone who could disprove his flat earth theory.

This image is from the article "\$5,000 for Proving the Earth is a Globe" (Modern Mechanics - Oct, 1931), which is available online at the [Flat Earth Society](#). This graphic shows that, on the Equinox, an observer at 45 degrees north latitude would see the Sun at an elevation angle of 45 degrees. This makes sense in the globe model, where the sun is many millions of miles away, but can also be interpreted as the sun being small and nearby, being at the same distance (3000 miles) from the Equator that the Sun is above the earth (making a 45-degree right triangle).

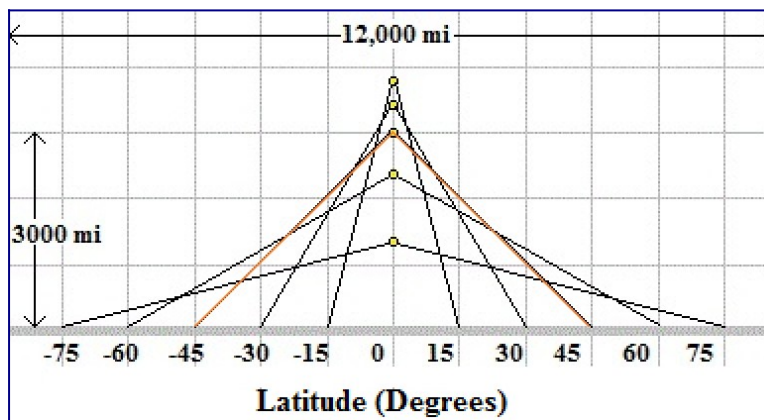


Now, the Voliva method can be applied to any latitude, as shown in the figure below. If the distance from the equator to 45 degrees latitude is 3,000 miles, then the distance from the equator to a given latitude, L , is just $200 \cdot L / 3$. (For $L = 45$ deg, $200 \cdot 45 / 3 = 200 \cdot 15 = 3,000$ miles). In the Voliva model, the diameter of Flat Earth is 24,000 miles.

Simple Trigonometry yields the formula for the Height of the Sun, measured on the Equinox, for any given latitude L: $H = 200L/(3 \tan(L))$.

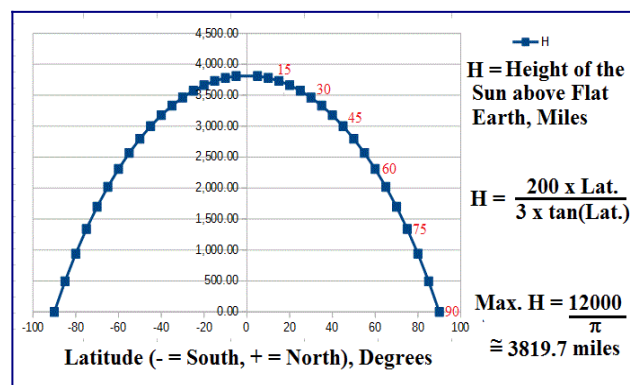


The graph below shows heights of the Flat Earth Sun, for various latitudes. These heights are NOT constant, but instead, depend on the observer's latitude. At latitudes closer to the equator than 45° , the sun's apparent height is OVER 3,000 miles; at latitudes closer to the poles, the sun's height is LESS than 3,000 miles.



This graph shows that, with the Voliva model for the Equinox, the height of the Sun can vary anywhere from 0 miles to 3819.7 miles ($= 12,000 / \pi$), depending on the observer's Latitude

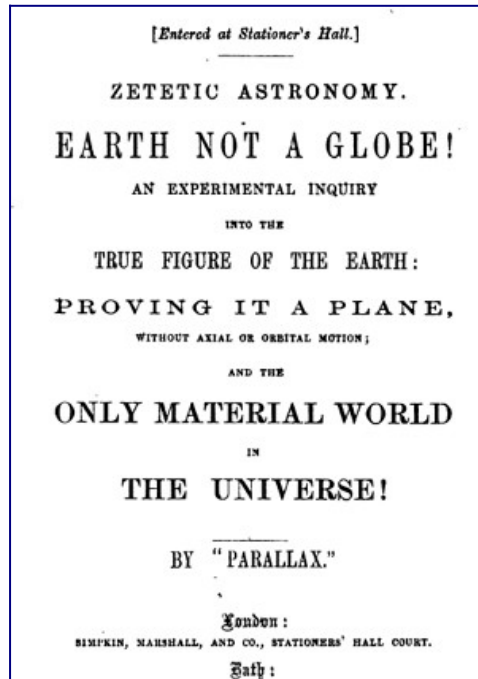
That's a real problem for Flat Earth Theory. If the sun is only a few thousand miles above the Earth, how can that height possibly depend upon an observer's Latitude? All observers should see the sun at the same Height.



Zetetic (Rowbotham) Model Results

Samuel Birley [Rowbotham](#), an English writer, was the author of "Zetetic Astronomy: Earth Not a Globe" using the pseudonym "Parallax".

In section III of his [1865 book](#), he describes a couple of experiments in which the height of the Sun above the Earth is determined to be "less than 4,000 miles". However, **Rowbotham does not actually complete the calculations**. Since the maths are straightforward, the results of the actual calculations are provided below.



In one of the "Zetetic" analyses, near Southampton, data are provided on two towns, 800 miles apart. The bottom part of the figure is an addition, with the maths Rowbotham did not complete. Elementary trigonometry can be employed to show that, interpreting the shadows as being on a Flat Earth, the height to the Sun is 2,854 miles.

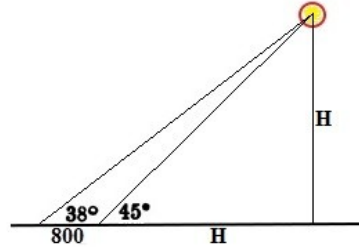
Since the above was written, an officer of the Royal Engineers, in the head-quarters of the Ordnance Survey, at Southampton, has furnished the following elements of observations recently made :—

Southern Station, Sun's altitude, 45°

Northern ditto, „ „ 38°

Distance between the two stations, 800 statute miles.

The calculation made from these elements gives the same result, viz, that the actual distance of the Sun from the Earth is less than 4,000 miles.



$$\frac{H}{800 + H} = \text{TAN}(38^\circ) = 0.781$$

$$H \times (1 - 0.781) = 0.219 \times H = 0.781 \times 800 = 625.0$$

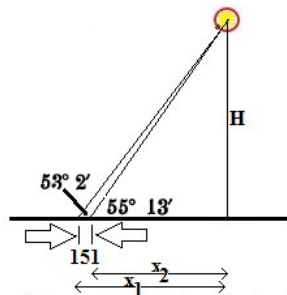
$$H = \frac{625.0 \text{ miles}}{0.219} = 2854 \text{ miles.}$$

In another "Zetetic" analysis, near Yorkshire, the distance of 151 miles was measured between two locations where the simultaneous elevations of the Sun were $55^\circ 13'$ and $52^\circ 2'$. Here, trigonometry and algebra give us the result Rowbotham only hinted at: the Sun is 2,606 miles above the Earth.

The following are the particulars of an observation made, a few years ago, by the officers engaged in the Ordnance survey. Altitude of the Sun at London $55^\circ 13'$; altitude taken at

74

the same time, on the grounds of a public school, at Ackworth, in Yorkshire, $53^\circ 2'$; the distance between the two places in a direct line, as measured by triangulation, is 151 statute miles. From these elements the true distance of the Sun may be readily computed; and proved to be under 4,000 miles !



$$\frac{H}{x_2} = \tan(55.217) = 1.440$$

$$\frac{H}{x_1} = \tan(53.033) = 1.329$$

$$H = 1.440 x_2 = 1.329 x_1 \quad x_1 - x_2 = 151 \text{ miles}$$

$$x_1 = x_2 + 151 \text{ miles} = \frac{1.329 x_1}{1.440} + 151 \text{ miles} = 0.923 x_1 + 151 \text{ miles}$$

$$(1 - 0.923) x_1 = 0.077 x_1 = 151 \text{ miles}$$

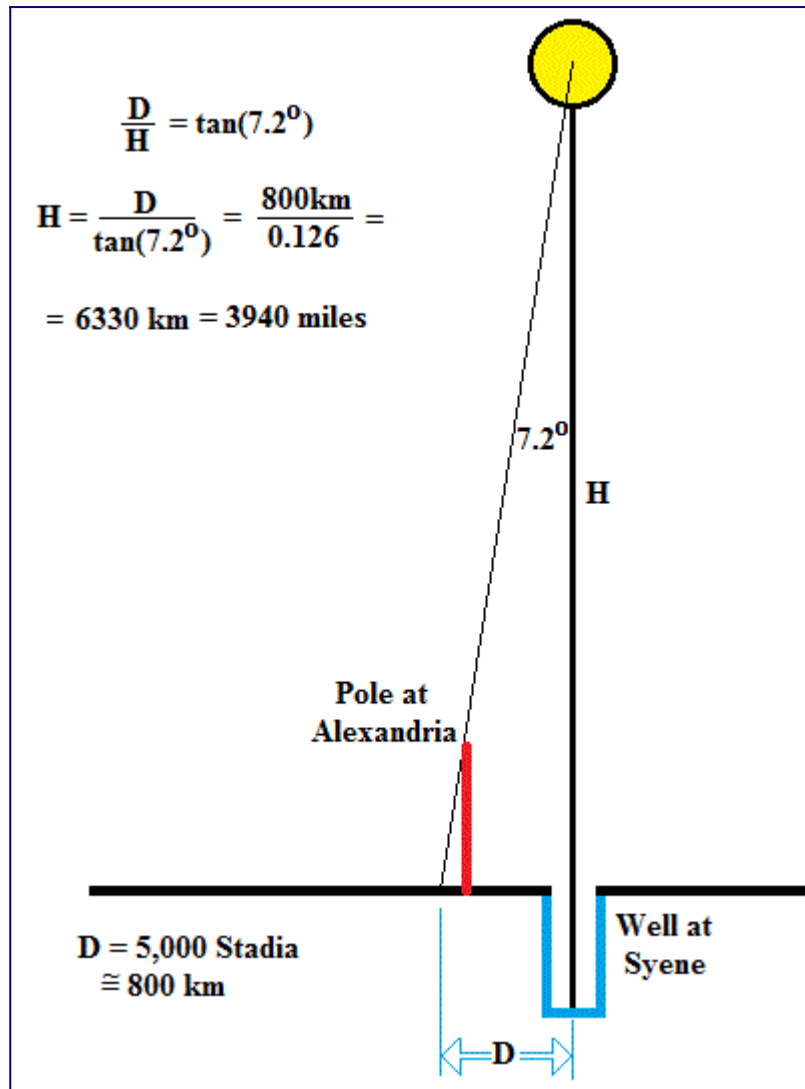
$$x_1 = \frac{151 \text{ miles}}{0.077} = 1961 \text{ miles}$$

$$x_2 = 0.923 x_1 = 1810 \text{ miles}$$

$$H = 1.440 x_2 = 1.329 x_1 = 2606 \text{ miles}$$

Interpreting Eratosthenes with Flat Earth, Results

Globe Earthers are fond of reminding Flat Earthers that the Greek, [Eratosthenes](#), calculated the size of the globe Earth way back in 240 B.C. However, Flat Earthers often respond that Eratosthenes' observations can be interpreted in light of a Flat Earth, and used to calculate the height of the Sun above the Flat Earth. The math is straightforward; using the fact that the shadow of the Sun was 7.2 degrees in Alexandria, but the sun was directly overhead a well in Syene, and that the distance between Alexandria and Syene was 5,000 stadia (~800 km), the height of the Sun above the Flat Earth comes to 6330 km (about 3,940 miles).



Conclusion

The Voliva method, which yields a 3,000 mile height of Sun for 45° , gives values of 0 to 3819.7 miles for other latitudes. Two examples from Rowbotham's "Zetetic" book weighed in at 2,854 miles and 2,606 miles. Finally, looking at Eratosthenes' measurements from a Flat Earth outlook yielded a height

of 3,940 miles. If the Earth was indeed Flat, should not all observers see the sun at the same Height? The fact that there are so many different heights of the Sun for different FE measurements is itself strong evidence that the Earth is, in fact, a Sphere (or slightly oblate spheroid for the sticklers). All of these examples are onsidered from a Global viewpoint in the next section.

NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR*NMSR

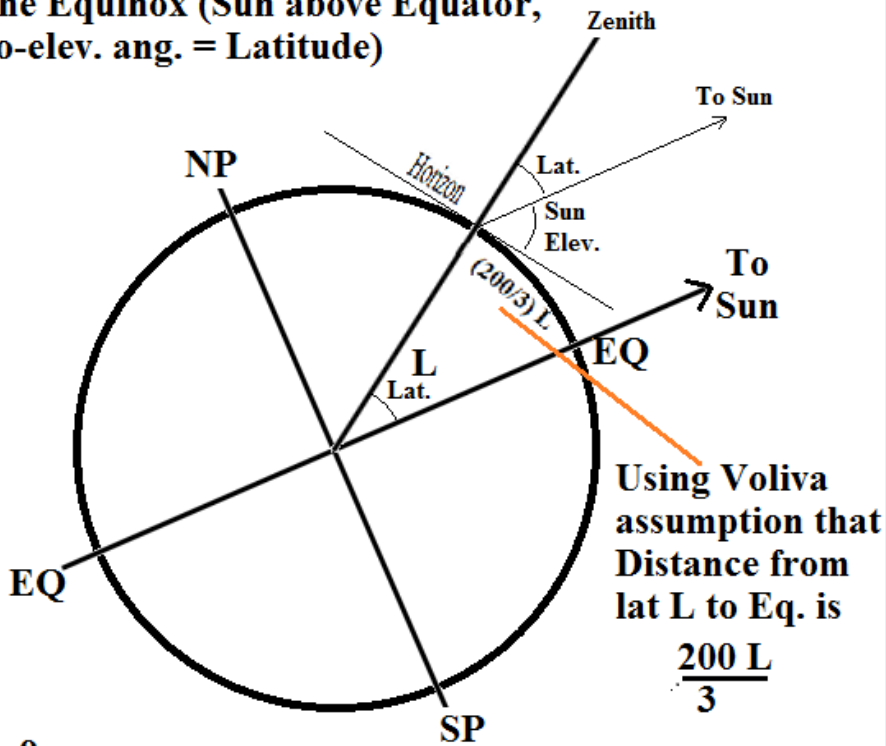
Spherical (Globe) Interpretations :

Measuring Earth's Radius using Flat Earth Measurements

For the diagram for the Voliva model shown above, interpreting the distance from equator to Latitude L as $200L/3$ is equivalent to assuming a diameter of Earth of 24,000 miles, a few percent below the accepted value (24,901 miles).

Treating the measurement of sun elevation angle at a given latitude, L, as you would an Eratosthenes-style determination of the earth's circumference, it quickly follows that the radius of the Earth is $12,000 \text{ miles} / \pi = 3819.17 \text{ miles}$, **independent of latitude**. That is, viewing this experiment in a spherical-based model, the radius of Earth is $12,000 \text{ miles} / \pi$; but, viewed from a Flat Earth perspective, the height of the sun is anywhere from Zero to $12,000 \text{ miles} / \pi$.

on the Equinox (Sun above Equator,
co-elev. ang. = Latitude)

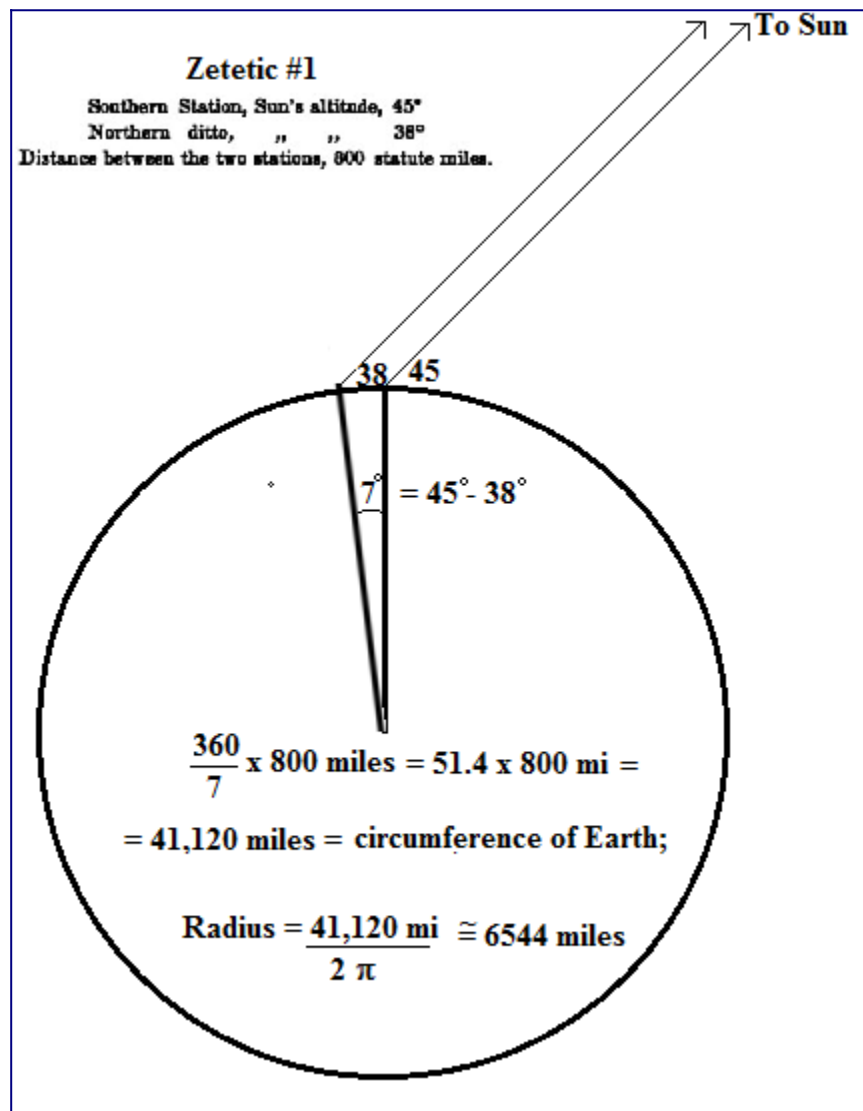


$$\frac{360^{\circ}}{\text{L}} \times \frac{200 \text{ L}}{3} = 24,000 \text{ miles} = \text{circumference of Earth}$$

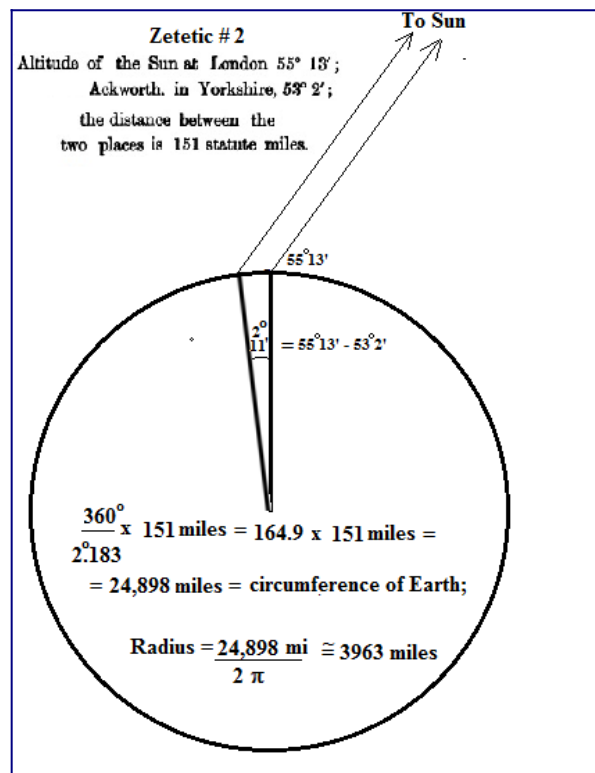
$$\text{Radius} = \frac{24,000 \text{ miles}}{2 \pi} = \frac{12,000}{\pi} = 3819.7 \text{ miles}$$

(Act. = 3960 miles)

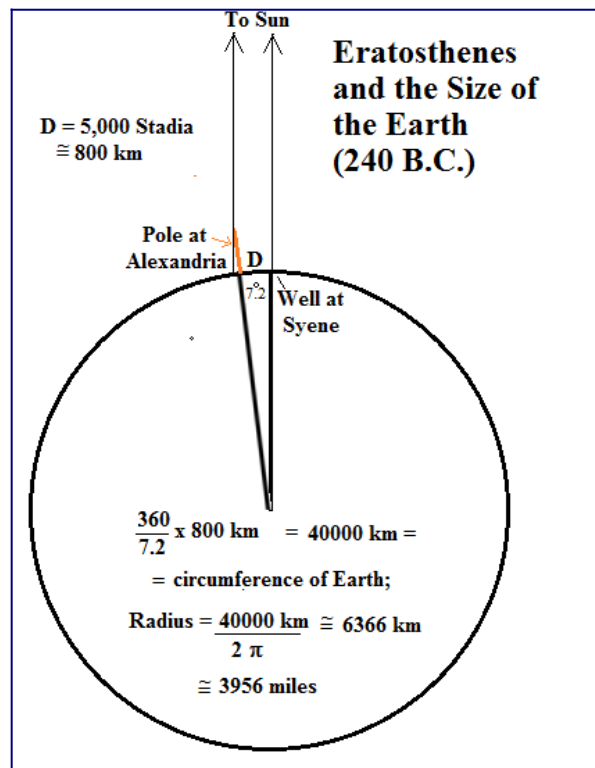
Interpreting the Southhampton example from Rowbotham's Zetetic book as a spherical-earth measurement, the seven-degree angle change over an 800-mile distance corresponds to a radius of the Earth of 6,544 miles, about 65 percent too large. Perhaps the angles were not measured at the same time, or to the needed accuracy. (An angular difference of 11.5° would have been closer, apparently.)



Interpreting the Yorkshire example from a spherical-earth perspective works out a lot better. This Zetetic measurement appears to be more reliable than the preceding one. Applying the 151-mile separation to the angular difference of 2°11', the radius of the Earth works out to 3,963 miles, very close to the accepted value.



Finally, interpreting Eratosthenes' measurements just as he did in 240 B.C. -- from a spherical earth perspective -- results in a radius of the Earth of 3,956 miles, quite close to the accepted value.



NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR * NMSR