

find that if θ is the elevation of the bodies when nearest to us, that is as seen in a direction at right angles to their path,

$$\begin{aligned}\tan \theta &= \tan 40^\circ / \cos 15^\circ, \\ &= \tan 41^\circ.\end{aligned}$$

That is, the elevation was 41° .

Then, measuring on the map* (see Fig 1) the distance of Toronto from the trace of the meteors, we find it to be 30 miles; and if h is the height of the meteors, we have,

$$\begin{aligned}h &= 30 \tan 41^\circ, \\ &= 26.1 \text{ miles.}\end{aligned}$$

As I have already remarked, the distance to the trace of the meteors may be in error 3 or 4 miles, and so the height is also doubtful almost to this amount.

The elevation from Mr. Herman's observations is about 43° , and his distance from the trace is $28\frac{1}{2}$ miles; from which the height comes out to be 26.5 miles.

Rev. Dr. Marsh, at Springville, observed the meteors to pass mainly behind the top of a telephone pole, though he states that some were slightly above, some slightly below. Afterwards he found the top of the pole to have an elevation of $14^\circ 58'$ above the eye, and the line joining the observer to the pole made an angle of 49° with the north-and-south line.

$$\begin{aligned}\text{Hence } \tan \theta &= \tan 14^\circ 58' / \cos 17^\circ 46', \\ &= \tan 15^\circ 41' .\end{aligned}$$

That is, the elevation of the meteors at the highest part of their path was $15^\circ 41'$. The distance of Springville from their trace on the earth is 91 miles, from which we have

$$\begin{aligned}\text{Height} &= 91 \times \tan 15^\circ 41', \\ &= 25.5 \text{ miles.}\end{aligned}$$

This agrees very well with the results just obtained.

The writer was much interested in the observations made by Mr. E. A. Norman, of Mill Bridge, (Hastings County).

* Measurements were made on a map of Ontario on a scale of 30 miles to the inch, not on the map from which this cut was obtained.

Mr. Norman was standing at the south-east corner of his barn when the meteors appeared at the south-west corner, seemingly just below the eave. A simple measurement of the height of the eave above the eye and the length of the barn gave the elevation of the meteors as 22° , as seen in the west. This leads to a height of 106 miles, an impossible result. At the writer's request Mr. Norman verified his measurements, and the only conclusion is that he was mistaken in thinking them up to the eave, although his statement that the first thought which came to him was that his barn was on fire at the eave is evidence to the contrary.

Mr. James G. MacMillan, B.A.Sc., of Toronto, estimated the elevation to be 30° , and afterwards verified it with a clinometer. This leads to a height of 17.4 miles, a result evidently too small. Mr. MacMillan explains, however, that he could not recover the precise position in which he stood when viewing the display, that he may have been 30 or 40 feet from it, which would explain the lowness of the result.

Mr. H. G. Murray, a student in mathematics at the University, when reporting to the writer first gave the elevation as 55° , but on a closer examination shortly after, he stated that he was confident it was not over 45° . This gives a height of 30 miles.

Again, when Mr. John Clark, of Moore Park, Toronto, was recounting to the writer all the circumstances of the display, he indicated the elevation above the south-west horizon, which was about 40° . This gives a height of 25.2 miles.

In Table II. are given the values of the height which I have deduced. The first three are the best determinations, and the average of these is 26.0 miles. In the last four cases the elevation appears to have been estimated with care, and the heights deduced are not greatly above the accepted value of 26 miles.