ing Mr. Denning, we believe that the track of the meteors in Ontario lay three miles south of the course laid out for them by Professor Chant, the two best observations, as well as the average of all the others, some of which are however rather divergent, appear to agree fairly well with an altitude of 35 miles. We shall therefore adopt this altitude for the meteors in Ontario, and shall assume that their track crossed longitude 80° in latitude 43°.35. This we shall call the Ontario station.

After passing this point, as we shall see presently, the meteors, by following a curved course, continued at practically the same elevation above the sea until they had passed the Bermudas. They then rose slightly, and we shall therefore take their height for a considerable distance to be about 35 miles. They traversed during this portion of their path several thousand miles in what was exclusively the earth's gravitational field. If not interfered with, they must necessarily have moved in a great circle over its surface. The only interference was that due to the atmospheric resistance to their motion, and to the pressure due to the rotational velocity of the earth's atmosphere. The former would not affect the direction of the path. The latter would tend to push the meteors to the eastward. We shall find in a later paper that this deviation would amount to only a fraction of a mile, so that we need not consider it, but shall assume that the course of the meteors was that of a great circle. Accepting the well known law that the density of our atmosphere is approximately halved for every ascent of 3.5 miles, we find that at 35 miles it would be 1/1024 of what it is at sea level, or 0.8 mm. Making certain corrections for the presence of water vapor, the change of gravity for altitude, etc., this value is reduced about one-half (Humphrey's Physics of the Air. p. 69).

TABLE I.

COURSE OF THE METEORS.

No.	Azimuth	Bermudas Distance	Bermudas Height	Bellusia Distance	Bellusia Height	Newlands Distance	Newlands Height
1	54°	35	20	59	28	91	39
2	54°.5	46	28	74	36	62	25
3	55°	57	36	97	45	35	14

Regarding the course of the meteors, according to Professor Chant, at the Ontario station it was towards the south-east, in azimuth 58°.8 measured from the south. The observations from the Bermudas and at sea indicate that this value is somewhat too large. Fortunately the meteors passed to the east of the steamer Bellusia and to the west of the Newlands, so that we are enabled to locate their path quite closely. If their azimuth had been as great as 56° they would have passed on the wrong side of the Newlands, if as small as 53° they would have passed through the zenith of the Bermudas. We shall see now however, that even azimuth 54° is impossibly small. Three azimuths have been computed, 54°, 54°.5, and 55°, and the distance of the course determined in each case, from the Bermudas, from the Bellusia, and from the Newlands, in statute miles. The results of these computations are given in the third, fifth, and seventh columns of Table I. The apparent altitude for the Bermudas was given at first roughly as 35° by Col. Winter. He refers later to an observation by a Mr. Gosling, who from a known position saw the higher of the two larger meteors go just over the top of a tree, whose altitude proved to be 30°.5. He gives a sketch, and I have taken the altitude of this meteor to be 32°. It cannot well have been less, nor is it likely to have been very much more. Ship's officers are used to estimating altitudes at sea, and I have taken their estimates exactly as they gave them, 25° for the Bellusia, and between 20° and 23° for the Newlands. I have taken the last at 21°.5. The corresponding heights of the meteors in miles, corrected for the curvature of the earth, are given in the fourth, sixth and last columns. We see at once that the heights of the meteors at the Bermudas are rather low. With azimuth 54° or even 54°.5 they could hardly have reached the Newlands, 3,000 miles distant. With azimuth 55°.5, they would have struck the sea within a few miles of the ship, or passed through its zenith. It therefore seems clear that the azimuth of the course of the meteors from our adopted station in Ontario can have differed little from S 55°.0 E.

The error of 3°.8 in the azimuth as given by Professor Chant is due to his having accepted the statement of the observer at Pense that the meteors passed "directly overhead." This statement certainly seems definite enough, but in point of fact they actually passed, according to the course as we have determined it, 108 miles to the north of him, at an altitude of 26°! Our determination is confirmed by the observer at Fort William, located just to the north of the Minnesota line, and about half way from the Ontario station to Pense, who says they passed to the south of him at a zenith distance of 30°. Had he been in the town itself, the zenith distance would have been just 15°, but it seems he was out snow-shoeing in the open. His exact location is therefore unknown, probably even to himself, but his observation would locate him some twelve miles to the north of the town. This furnishes a pretty accurate check on the course. At Fort Francis on Rainy Lake, 100 miles farther west, an indian reported that the meteors passed to the north of him. According to Professor Chant the meteors should have passed to the south, and he states that he thinks the indian must have been confused as to his direction. Indians are usually not very likely to be mistaken in matters of that sort, and it seems that he was right after all, for the meteors did pass to the north of him.

As an illustration of the curious numerical errors that sometimes occur in the observations of meteors, the observer at Richard's Landing on Lake Huron, who seems to have been in general a careful and competent witness, states that the meteors passed 22°.5 to the south of his zenith. They actually passed 56° to the south, at a horizontal