

the stony ones, and so did not become conspicuous until it had reached Ontario. Neither did it throw off slivers to form a tail until it was much whiter and hotter. This was the case in Bermuda. Owing to its greater mass in proportion to its surface, it suffered less relative resistance from the air, and so while starting near the end of the procession, it at length took its position at the head, where it got white hot, and became so heated through and through, that it broke in two before reaching Bermuda. Finally only one of these parts survived to be seen from the steamer Newlands.

The composite character of this stream therefore gives us a clue by which we may decide on the composition of those fireballs which are not known to reach the earth's surface. Most of them belong to the swiftly moving variety, and are therefore composed of iron. Unless their real motion is very swift indeed, or exceptionally long enduring as in the present case, they do not have tails. The rarely seen, slowly moving kind, are composed of stone as a usual thing. These sometimes have conspicuous tails, and are the ones which are most likely to reach the ground. The length of the longest tails of the meteors that crossed Ontario were estimated in degrees by seven different observers. The results range from 3 up to 50 miles, with an average of about 20. The estimate at Bermuda gives 15.

With regard to the speed of the meteors, the only one that we can identify with any certainty is the bright white one that we believe was composed of iron. If this occupied the middle of the train in Ontario, we see by Table I that it must have passed at 9^h 08^m.5 E. S. T. or 14^h 08^m.5 G. M. T. We have no record of the time in the United States, nor in Bermuda. The two times given by the Bellusia were given from memory, and both appear to be hopelessly wrong, unless indeed Mean time was employed. If so, that fact is not stated. Fortunately the officer on the watch on the Newlands timed the meteors, and gives it as 12^h 13^m Local, Apparent. This reduced to Greenwich for his longitude, 32° 30', gives us 14^h 37^m.5.

Unfortunately he does not state definitely what he timed, whether it was the very bright meteor which first attracted his attention, and to which he refers in the quotation given above, or whether it was the beginning of the procession which followed. If the former, then the time required by the iron meteor to travel from Ontario to the point where it was observed from the Newlands was 29 minutes. If the latter, and the meteors preceded the procession by let us say a minute, the time of transit was 28, and the time taken by the head of the procession 32 minutes. It is possible that he timed the middle of the procession, which would reduce the last two figures by 3 minutes. Whatever he timed will not make a very great difference, and we shall perhaps be safe in assuming that it was the head of the procession, and that therefore the time of transit of the iron meteor from Ontario to the Newlands was 28 minutes. The distance was 4353