

moon, and travelling at a speed of seven miles per second at a height of about twenty-five miles, is sufficient to maintain that velocity against the air resistance for eight to ten miles. A drop in speed lessens the air resistance, but it also lessens the kinetic energy, and the meteor drops into denser air. **When a meteor no brighter than the full moon has dropped to a speed of seven miles per second, and a height of twenty-five miles, the end of its path is very near.**

The popular explanation has been quite generally accepted,² but Fisher and Hoffmeister³ have questioned whether it is completely correct. Neither, however, appears to challenge the assumption of long paths extending from horizon to horizon and neither makes any determination of the radiant or a calculation of a real path.

THE FIREBALLS OF FEBRUARY 9, 1913

The following are the more important fireballs which probably fell from the leading radiant on that night:

First, a detonating meteor which fell over Ontario at 9:06 P.M., 75th meridian time.

Second, a shadow-casting meteor observed from Ann Arbor, Michigan, at 10:15 P.M., C.S.T. (11:15 P.M., 75th meridian time).

Third, a spectacular fireball⁴ observed from Bermuda at 10:00 P.M., Atlantic time (9:00 P.M., 75th meridian time).

Fourth, a shadow-casting meteor observed in Ontario at 1:25 A.M., 75th meridian time, February 10.

Fifth, a daylight detonating meteor which fell in Patagonia at 6:00 A.M., February 10.

In addition to these spectacular meteors, several groups of shooting stars were observed, among them the following:

Fort Frances, Ontario, 9:00 P.M., C.S.T. (10:00 P.M., 75th meridian time).

A string of forty or so meteors, followed after five minutes by a string of eight, passed north of overhead.

Mortlach, Sask., 7:10 Mountain time (9:10 P.M., 75th meridian time). "Must have been hundreds."

Watchung, New Jersey. (Time not given, returning from church). Saw seven distinct meteors, two burst.

Pense, Sask., 7:00 M.S.T. (9:00 P.M., 75th meridian time). Considerable number of meteors seen singly and in groups.

Ontario. Shooting stars unusually bright, or in unusual numbers, were reported at various times from 7:30 P.M., February 9 to 2:20 A.M., February 10. The greatest number were noticed immediately after the fall of the detonating meteor, as people were looking up then. Only two or three were definitely not from the leading radiant.

² Baker, *Astronomy*, (third edition), p. 249; *Encyclopaedia Britannica*, Vol. 15, p. 339; Fath, *Astronomy*, (third edition), p. 229; Hutchinson, *Splendour of the Heavens*, Vol. 1, p. 441; Jones, *Worlds Without End*, p. 139; Newcomb-Engelmann, *Populaire Astronomie, Siebente Auflage*, p. 515; Niminger, *Our Stone-Pelted Planet*, pp. 85-86; Olivier, *Meteors*, p. 242; Russell-Dugan-Stewart, *Astronomy*, Vol. 1, pp. 453-454; Waterfield, *A Hundred Years of Astronomy*, p. 481.

³ Fisher, *POPULAR ASTRONOMY*, Vol. 36, pp. 398-403; Hoffmeister, *Die Meteore*, p. 78.

⁴ The report indicates that a single fireball, which burst, was observed in Bermuda.

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