

Popular Astronomy

Vol. XLVII, No. 6

JUNE-JULY, 1939

Whole No. 466

The Radiant and Orbit of the Meteors of February 9, 1913

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The meteors of February 9, 1913, are among the best known of modern times, being mentioned in general textbooks, books on meteors and meteorites, encyclopedias, histories, and popular books. More than 140 reports are available,¹ nearly all having been collected and published by Professor C. A. Chant, of the University of Toronto. Had he not made that prompt investigation, this study would have been quite impossible.

THE POPULAR EXPLANATION IS UNTENABLE

The popular explanation of the phenomenon is that a cluster of fireballs travelled from Saskatchewan across North America, and over the Atlantic to the equator, a distance of some 5700 miles. Several considerations, of which we will mention four, make this explanation untenable.

First, the letters give the descriptions we would receive from intelligent people on a shower of meteors with a radiant in the north-north-west. They do not describe what the popular explanation assumes—a cluster of fireballs rising from behind objects on the horizon in the west-northwest, crossing the sky on a great circle, and going behind objects on the horizon in the east-southeast.

Second, the disappearance of a shadow-casting meteor behind objects on the horizon is impressive, and observers who see it comment on the spectacle when they write. The fact that no observer reports seeing this shows that few, if any, bright meteors went behind objects on the horizon for the more than 140 observers reporting. This, in turn, shows that the paths cannot have been especially long, for we have received such reports on several meteors.

Third, only shadow-casting meteors come low enough for detonations. The shooting stars coming from the same radiant must have ended twenty-five or thirty miles higher than the detonating meteor. Any conclusions based on the assumption that the shooting stars and the detonating meteor were at the same height when brightest must be erroneous.

Fourth, the kinetic energy of a meteor about as bright as the full

¹ *Journal of the Royal Astronomical Society of Canada*, Vol. 7, pp. 145-215, 383, 404-413, 438-447; Vol. 9, pp. 287-289; *Journal British Astronomical Association*, Vol. 24, pp. 101-111; *POPULAR ASTRONOMY*, Vol. 30, pp. 632-637; Vol. 31, pp. 96-104, 443-449, 501-505.