

However, the shower of shooting stars in connection with this fall indicates a swarm of small particles which is characteristic of comets rather than asteroids. The following are the elements obtained.

$$\begin{aligned}a &= 1.38 \\e &= 0.328 \\\omega &= 220^{\circ}3 \\\Omega &= 320^{\circ}8 \\i &= 17^{\circ}5 \\P &= 1.62 \text{ years}\end{aligned}$$

SUMMARY

The meteoric display of February 9, 1913, was a shower of fireballs and shooting stars from a radiant in the north-northwest. It was not a procession of fireballs moving over an unusually long path. The most spectacular meteor of the display was a detonating meteor which fell in Ontario at 9:06½ P.M., 75th meridian time.

The approximate radiant is indicated by three references to Cassiopeia, and it was computed from the paths of the Ann Arbor and Bermuda fireballs, together with the direction of travel of overhead meteors in Ontario.

The true geocentric radiant was computed from the detonating meteor, and the Ann Arbor meteor observed by an astronomer, as follows: the projected path of the detonating meteor was drawn using reports which gave the direction of the path from overhead. The height of the real path at various points was obtained from two measurements of the apparent height. The directions of the points of appearance and disappearance were obtained by selecting the reports which appeared to give these directions the most carefully. The endpoint was obtained more accurately from the detonations as follows: without using any estimates of time this point was made to agree with the reports stating whether the detonations occurred during or after the display of shooting stars. The approximate velocity was obtained from the estimates of duration. An accurate value for the velocity was obtained on the assumption that the Ann Arbor meteor came from the same radiant and with the same velocity as the detonating meteor. With this value of the velocity, the altitude of the apparent radiant was corrected for zenith attraction and the right ascension and declination of the true radiant were obtained.

From the right ascension and declination of the radiant and the apparent velocity, the geocentric velocity and the heliocentric velocity were computed. The right ascension and declination of the heliocentric radiant were computed, and, following this, the elements of the orbit about the sun. The orbit is direct, and it resembles the orbits of the small asteroids which pass inside the orbit of the earth rather than the orbits of the comets.

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