

luminous arcs of great circles diverging from the radiant point and passing downward to intersect the horizon under angles always large and for the most part approaching  $90^\circ$  in value. In sharpest contrast, the path of the bright green fireball seen from near Starvation Peak was very nearly, if not exactly, parallel to the horizon. This green fireball certainly did not emanate from the Geminid radiant.

Subject to discovery that a new (non-Geminid) meteoric radiant emitting numerous very bright fireballs of a vivid green color (deeper and richer than the green of the beacon at the New Municipal Airport south of Santa Fe, New Mexico) has suddenly become active during the first half of December, I am now convinced the various "green Flare" incidents reported to the O. S. I. are not meteoric in nature. See Incidents: 225, 226, 223, 223a, 224, 230

Significant Differences Between the Fireballs Observed in the Interval December 5-13 and Typical Meteors:

- a. The horizontal nature of the paths of most of the December fireballs is most unusual. Genuine meteors are rarely observed to move in horizontal paths.
- b. The very low height of the December fireball discussed in Section 2 above sets it off in sharp contrast from the genuine meteors for which heights of the order of 40 or more miles are normally observed.
- c. The velocity determined for the fireball of December 12 is much less than the velocities determined from typical meteors (and yet is considerably greater than the speeds of the V-2 Rockets or jet planes or of conventional flares).
- d. In the case of meteorites that penetrate to as low levels as that determined for the fireball of December 12, the observed luminous phenomena are always accompanied by very violent noises. No noises whatever have been observed in connection with the various December fireballs so far investigated.
- e. Genuine meteors normally show remarkable variations in brightness beginning as fine thin hair lines, which are scarcely visible to the observer and then brightening up to flash out near the end of their paths. In the case of the December fireballs, most of the observers have reported that the green balls appeared almost instantly at their full brightness.
- f. In the case of genuine meteors the paths are directed toward all points of the compass with equal frequency. On the contrary in the case of the green fireballs, plots of admissible approach sectors show that there is a very pronounced tendency for the paths to come in from the north half of the sky.
- g. The three groups of anomalous greenish luminous phenomena show a curious association with well known meteor showers, although none