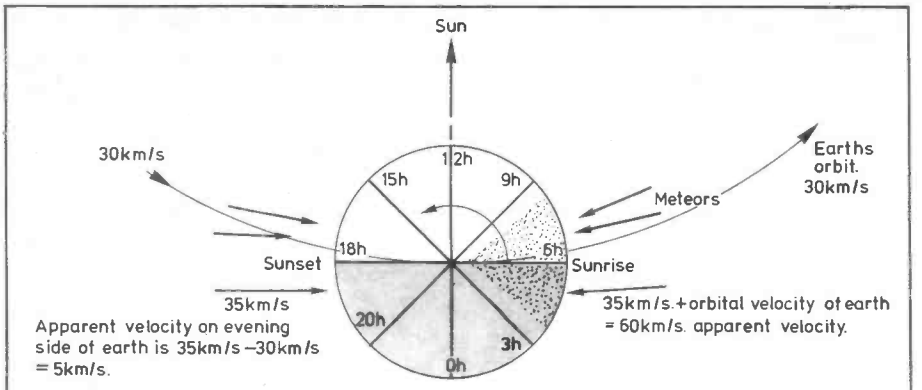

FIG. 4 The path of the earth intercepts more sporadic meteors at sunrise than it does at sunset.

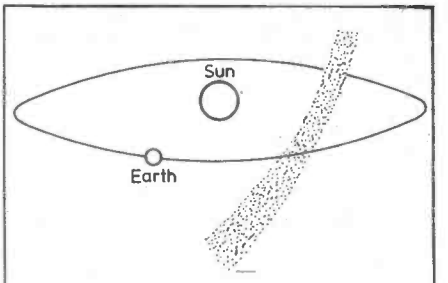

FIG. 5.
Each year the earth intercepts regular meteor showers with orbits often much inclined to our own.

passes through large areas of concentrated particles resulting in a major meteor shower. **(Fig. 5)**

The distribution is uneven and contained in highly elliptical orbits around the sun which are inclined at varying angles compared to that of the earth. The origins are probably cometary and although the comets themselves are now extinct in most cases, the remains continue in predictable orbits and have celestial co-ordinates which allow accurate timing and positioning to be made.

THE RADIANT POINT

The radiant point is the position in the sky from which the meteors appear to originate and the shower name is taken from the constellation in that part of the sky which contains the radiant point. Hence the Geminids shower radiant appears in the constellation of Gemini and the Orionids in Orion. The only exception to this is the January Quadrantids. This particular constellation is now obsolete and is incorporated into Boötes.

Although the meteors give the appearance of coming from a point source it is an effect of perspective and in fact they are moving in parallel paths towards us. This fact can be best understood by imagining two long straight roads running parallel to each other and stretching towards the horizon. In the far distance they seem to converge into a single point and this could effectively be looked upon as the radiant point (see **Fig. 6 a, b, c**).

The co-ordinates for establishing this point on the celestial sphere are known as Right Ascension (celestial longitude) and declination (celestial latitude) angles and are quoted in degrees or time. **(Fig. 7)**. All meteor shower radiants have the same apparent motion as the stars, rising in the East and setting in the West due to rotation of the earth on its axis.

When the Right ascension and declination angles are known it is possible to plot the path of the radiant point onto a plane surface and determine the best possible times and directions for meteor scatter communications in any given shower.

Plot of all major showers are shown in Figs. 8a-8k. The drawings and instructions on their use will be given next month.

It should be noted that the local times given for any shower and the optimum direction of propagation at a given time do not change from year to year although the peak of the shower is retarded by 6 hours each year over a 4 year cycle for a given location. This is accounted for by the fact that our year is 365¼ days long and the earth will have to complete 4 orbits of the sun (4 years) before it is in the same position at the same time again.

During this period the earth will have effectively completed one additional rotation on its own axis intercepting the same point in space again, at the same time of day. The date will also be the same due to the addition of an extra day (leap year).

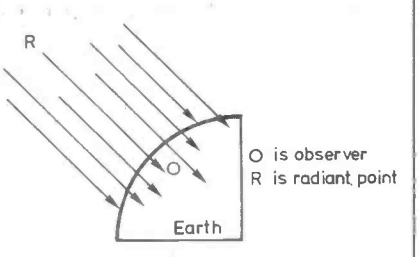

FIG. 6a. Showing that all meteors in a given shower travel on parallel paths towards earth.

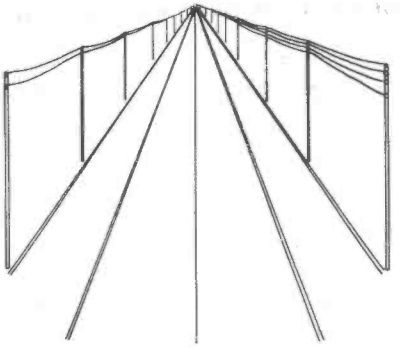

FIG. 6b.
Demonstrating geometrical effects of perspective which are familiar to us. Although the roads are running parallel to each other they appear to converge in the distance.

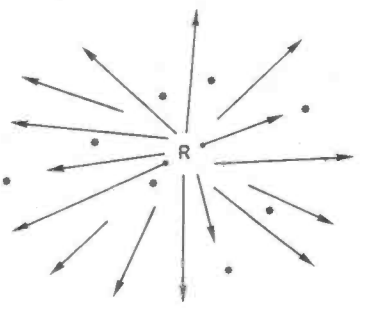

FIG. 6c. Although the meteors are on parallel paths they appear to radiate from a point source – the radiant.