

## Fireworks in the sky

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Last year just after the festival of lights, the skies opened up another show of crackers – this time for a selected few on earth. Meteors showered to the amusement of only amateur astronomers. Such shows are generally reserved for early birds, which include even joggers and military personnel. The Kargil soldiers were taken by surprise by the most beautiful showers in 1998. The city lads among them mistook for a sudden attack from the enemies; their colleagues from villages put their arms down and enjoyed the show.

Generally any dawn will show about 5 -10 meteors per hour. These are sporadic meteors and a good chance of seeing is provided by the absence of the moon and clear skies. However on some specified days of the year the number increases to almost 300 per hour. This is called a shower. It builds up gradually for about a week and then the decrease also is gradual.

It is a matter of great interest to know why the meteor showers observe the solar calendar – they occur precisely on the specified days of the year. The puzzle was solved about 110 years ago, after pooling up the data of showers and some “missing” comets. The natives of South America were the first to identify the periodicity and inform two botanists, who in turn communicated the excitement to the world via “The Gentlemens’ Magazine” in 1799. The showers recur every year on the 17<sup>th</sup> November with a grand show once every 33 years. This is associated with the comet Tempel – Tuttle which visited us in 1992. Simple calculations show that the escape velocity on a comet is indeed

a very small number, owing to its small mass. You can just walk off to space, if you happen to land on one of them! Most of the material evaporated from the comet will be lost this way and they are left behind all along the orbit. The orbits of the comets are inclined to that of earth providing only one or two chances for the earth to near this debris of cometary material. The small dust particles fall on the earth with very high velocities. As they enter the atmosphere, they get oxygen and burn up in the sky. It is this action of burning that produces the light streak. This also explains why the showers occur on specified days of the year. We have two showers one in April and another in October when the earth encounters the debris of comet Halley. The dust of comet Tempel - Tuttle shower on earth every year during November. Each visit of the comet (once in 33 years) replenishes the dust; thus just after an apparition we are likely to have a good show as we had in 1999.

The showers are assigned names of constellations like Aquarids, Perseids and Leonids. This refers to the specific direction in the sky from where they appear to come. A cross check with the names and associated dates will show that the specific constellations rise only at dawn.

The successive visits of the comet over several centuries have created blobs of dust material which are slowly drifting. By systematic observations of the showers it has been possible to identify these blobs of dust – their location along the orbit. Each is assigned the number of the year of apparition. For example the dust accumulated in 1886, 1833 and 1899 are clustered and the earth passed through this group in 1999. However the clustering due to 1767, 1733 and 1799 also was close by and created a second peak. Last year (2008) the earth passed

through the edge of the debris of 1466 and created a sharp increase in the number – about 100 per hour. This year it will pass through the center of this dust blob and hence there is an increased activity.

Meteors can cause a hiss on the radios too; this is also a method used for counting the number of meteors. Compiling previous years' data many have predicted the activity for this year. Quite interestingly the time of the peak activity is favourable for us in Asia. A second peak also is predicted but who is the lucky observer? We do not know.

Leo rises only by 2:00am; however you will see some meteor streaks even before that. Go to the terrace and lie down flat – this ensures that you get a good view of the entire sky. If you are in the sitting posture there is a likelihood of missing some of them behind you. It is difficult to capture the streaks on the camera; however you can expose it for a long time. The stars leave trails and the meteors will be recorded as streaks criss-crossing the star trails. You will get to see the two planets Mars and Saturn on either side of Leo. Mars has just moved away from the beautiful star cluster called Preasepe. You may be able to see the cluster with naked eyes from a location which is free of light pollution. If you have binoculars you can search around Mars for this cluster. Fortunately, there is no moonlight allowing you to see faint meteors as well. The low level activity begins by 14<sup>th</sup> itself; gradually builds up to reach a peak on 18<sup>th</sup> early morning. Then it fades again and ends by about 21<sup>st</sup>.

Observing the meteors is the easiest and does not require any gadget other than your two eyes. Search for a dark (light) pollution free location and enjoy!

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