Iowa Science Teachers Journal

Volume 29 | Number 1 Article 7

1992

Astronomy Resources - Taking a Meteor Shower

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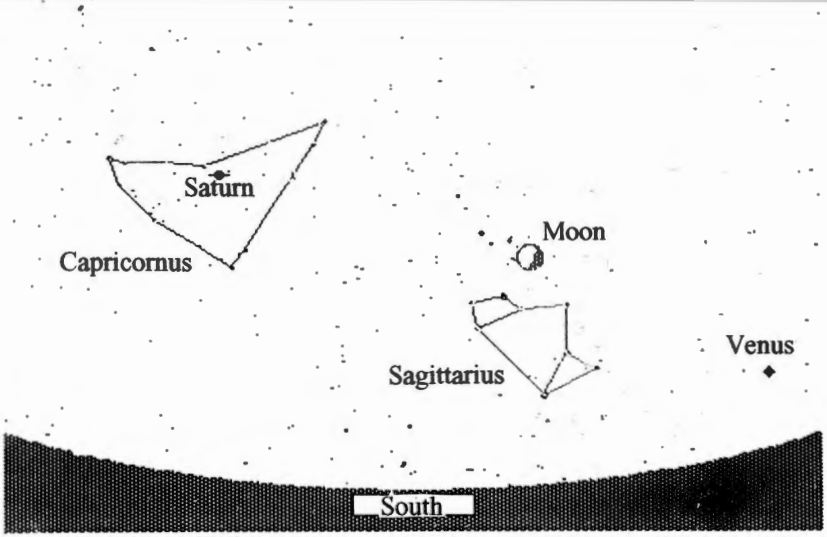

Figure 8
October 30, 1992
6:00 p.m.

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ASTRONOMY RESOURCES
Taking a Meteor Shower

The summer months are often the most popular for skygazing. Mild weather combined with a host of appealing astronomical events tends to attract both amateur and professional astronomers to look skyward.

One of the more brilliant and "flashy" events to observe is a meteor shower. As children, many of us remember watching a "falling" star shoot across the sky. Little did we know that what we were actually observing was a piece of space debris known as a "meteor." Meteors may appear at any time and from any direction, but most of the visible meteors viewed each year are parts of defined meteor showers.

Meteors are bits of "Solar System debris" falling towards Earth. They are small and disintegrate easily, burning up entirely as they pass through the upper layers of the earth's atmosphere (most meteors vaporize

above altitudes of 80 km). In 1861, Daniel Kirkwood suggested a connection between meteor showers and debris from comets. Further research confirmed Kirkwood's suggestion and, today, nearly half of the regularly occurring meteor showers are associated with comets.

Like comets, meteor showers are regular, occurring at about the same time each year (though not all of them are consistent from year to year). This summer, meteors from the Delta Aquarid, Orionid and Perseid meteor showers will be visible. The Perseid shower is the most reliable recorded meteor shower, occurring between July 25 and August 18 each year and producing a maximum of 68 meteors per hour.

Meteor showers are named for the constellation from which the meteors appear to originate. The Perseid meteors, for example, will appear to radiate from the constellation Perseus. The only exception to this rule is the Quadrantid shower, which was named for Quadrans Muralis, a constellation that has been rejected.

This meteor shower "nomenclature" makes viewing meteors less difficult as one may locate the point of radiation by finding the appropriate constellation. Once the approximate location of the meteor radiant is located, the viewer must simply watch and wait. It is best to concentrate observation on the area of sky about 30° away from the radiant. Because of their speed and the relative unpredictability of their exact origins, meteors are best observed with the naked eye or, once a fairly precise field of meteor appearance is located, with a pair of wide-field binoculars. For optimal viewing, the sky must be dark and cloud-free. A waning or new moon will not cause too much interference with viewing, but bright moonlight (e.g. a full or almost full moon) will obscure all but the brightest meteors. Unfortunately this year the spectacular Perseid shower coincides with a full moon, but some of the brighter meteors will still be observable with the naked eye.

It is possible to capture meteors on film if one has the patience for trial-and-error photography. A camera with a large aperture, wide field of view and short focal length is best suited for meteor photography. The best time to photograph is during the peak period of a very active shower such as the Perseids or the Quadrantids. Like visual meteor observing, meteor photography is a matter of watch and wait. The camera must be set on a tripod and focused on the area of sky in which the meteors are appearing. The shutter should be opened for several minutes at a time (Dr. Darrel Hoff of Project STAR recommends 15-minute exposures) to capture meteor activity. A successful photograph will be produced if a meteor of enough brightness passes within the field of the camera (the meteor will

appear as an angular streak of light in the photograph). This method offers no guarantees, but it presents an interesting challenge to the amateur photographer and astronomer.

The table below lists some of the meteor showers that occur annually and have peaks of more than ten meteors per hour.

Shower	Begins	Peak	Ends	M/H[1]	Assoc. Comet
Quadrantids	1 Jan.	3 Jan.	6 Jan.	110	
Lyrids	19 Apr.	22 Apr.	24 Apr.	12	1861 I-Thatcher
Eta Aquarids	2 May	4 May	7 May	20	P/Halley?
Delta Aquarids	15 July	28 July	15 Aug.	35	
Perseids	25 July	12 Aug.	18 Aug.	68	P/Swift-Tuttle
Orionids	16 Oct.	21 Oct.	26 Oct.	30	P/Halley?
Taurids	20 Oct.	4 Nov.	25 Nov.	12	P/Encke
Geminids	7 Dec.	14 Dec.	15 Dec.	58	
Ursids	17 Dec.	22 Dec.	24 Dec.	12	P/Tuttle

[1]Meteors per hour at peak of shower with the radiant at the zenith for the observer.

Recommended Sources

McGraw-Hill Publishers. 1977. *McGraw-Hill encyclopedia of science and technology.* 15 vols. New York: McGraw-Hill.

Moore, P. 1988. *The Guinness book of astronomy.* Enfield, England: Guinness.

--S.A.A.