HEAVENLY NEWS
"Meteor Showers and the Occasional Storm"
by Frank Grober, Docent
Cameron Park Rotary Community Observatory

"Arise, Abraham, the Day of Judgment has come!" …shooting stars were flying across the sky at a rate of 100,000 per hour that early morning in November, 1833. The landlord at the boarding house where Abraham Lincoln lived, a church deacon, could be forgiven for mistaking the celestial spectacular for the Day of Judgment. The meteors appeared in all parts of the sky, but seemed to be flying away from a point in the constellation Leo. The Earth was flying through a stream of particles shed by comet Temple-Tuttle a century or so previously. There are other meteor showers that occur when the Earth crosses other debris streams. They are named, like the Leonids, for the constellation from which the meteors appear to radiate.

Meteor showers occur once a year when the Earth crosses a debris stream. Two showers, the Geminids around December 12-14 and the Perseids around August 12-13, produce reliable displays of 50-100 meteors per hour for an observer with a dark sky. Another dozen or so showers can produce displays of 10-20 per hour, compared to 1-2 meteors per hour visible when no shower is occurring. Interestingly, Mars has a different set of meteor showers, and a meteor from such a shower may have been observed by a Mars lander.

The Italian astronomer Schiaparelli, who gained later fame for his discovery of the "canals" on Mars, showed that meteor showers were associated with comets in the 1860s. Today we can see how this happens. Recently a spacecraft returned pictures of Comet Hartley 2. The comet was shaped like a peanut, with jets of gas carrying off dust particles at either end. The dust particles form ribbons of debris, whose orbits change over time with the effects of gravity and sunlight. Traveling at many miles per second, even a tiny bit of dust produces a shooting star when heated to incandescence while entering the atmosphere. Spectacular showers occur when the Earth passes through a particularly thick ribbon of debris.

The big shows, like the Leonids of 1833 and 1966 and the thousands per hour from the Draconids of 1933 and 1946, are rare events. This is sad for stargazers, but good for NASA, which worries about impacting particles threatening astronauts and satellites. Although conditions will not be favorable for North American observers, the 2011 Draconids (October 8-11) may produce a meteor storm, and is already a matter of concern for NASA planners.

This year's Leonids, around November 17, may produce a dozen or so meteors per hour. Prospects for a meteor storm from the Leonids are poor for the rest of the century, but we may have storms from the Draconids or a surprise from an as-yet-undiscovered debris ribbon. Astronomers are rapidly improving their ability to predict these events, so the next meteor storm may be well advertised.

A visit to the Cameron Park Rotary Community Observatory is a chance to see the Moon and Jupiter, and many other objects, through powerful telescopes. It is also a good way to learn about upcoming events like meteor showers, eclipses, and comets. Weather permitting, public viewing sessions are held on Friday, Saturday, and Sunday nights from 7:30 PM – 9:30PM until we once again change to Daylight Savings Time. Special sessions

may be arranged for schools and community groups. Information about the observatory and closure notices are posted on the observatory's web site at www.communityobservatory.com and by recorded message on the observatory phone (530) 344-5707.