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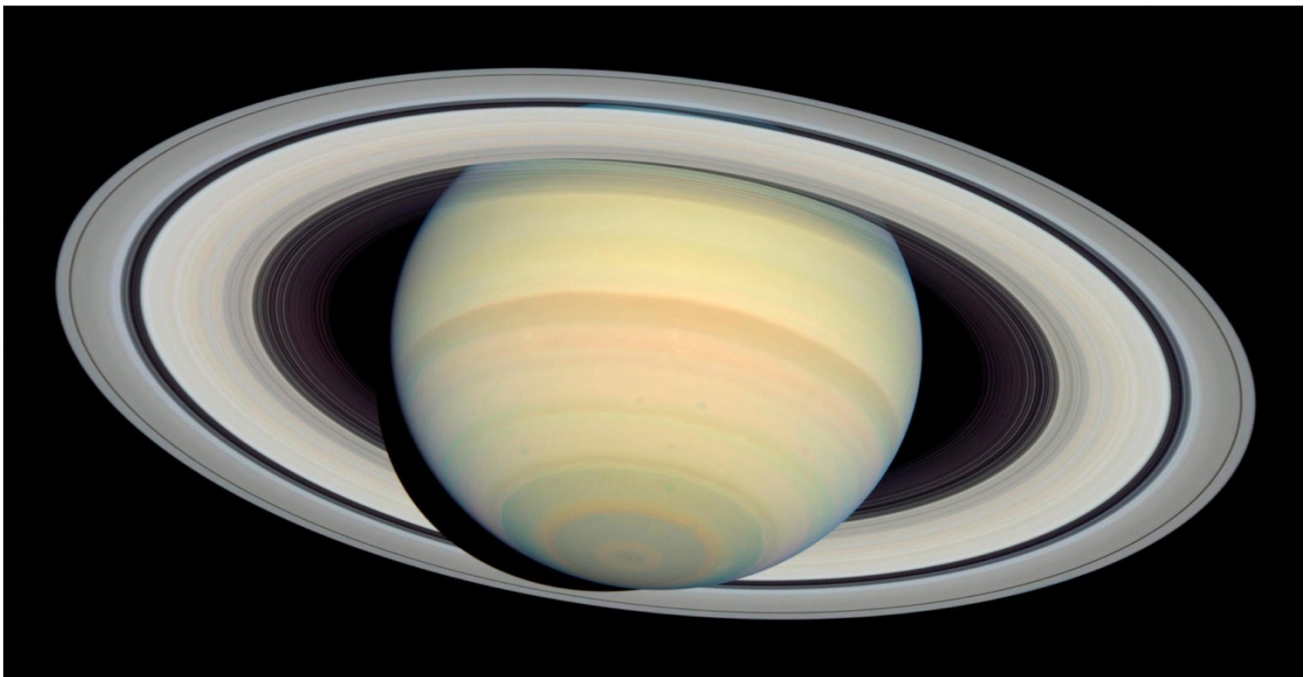
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Saturn Photo from
NASA/JPL

Mountain Skies

June 6, 2017

SATURN RETURNS TO THE EVENING SKY

The planets: Perhaps the most exciting nighttime object to view through a telescope is the beautiful ringed planet Saturn. At public observing sessions such as the SkyTrek observing sessions offered at PARI (weather permitting, of course), one of more of our telescopes will be on this spectacular object if it is in the sky. To the naked eye, Saturn appears to be just another reasonably bright star although it doesn't twinkle. (Planets don't twinkle.) But, through a telescope we see the



beautiful rings. The reaction of a person viewing this celestial wonder for the first time is usually either "WOW!" or "You're fooling me; that's a picture, isn't it?" Well, this month Saturn is moving into the early evening sky. On the 15th it will be in *opposition* to the sun which means it is on the opposite side of the earth from the sun. This, in turn, means it will be on the opposite side of the sky from the sun and, as the sun sets, Saturn rises. As a bonus for us this observing season Saturn's rings will be "open" to their greatest extent. This means they are tilted at an angle to our line of sight that allows us to see them in all their splendid beauty.

Saturn may be the most beautiful planet in the sky but it's not the brightest. That crown goes to the brilliant Venus, the queen of the sky. Venus is now our "morning star." It is well up in the east at sunrise and, as the month progresses, it will rise even earlier each morning. That is despite the fact that last Saturday it was at its *greatest elongation* from the sun, a full 46° from our central star. Venus will remain in the predawn skies until the very end of 2017.

Back to the early evening sky, the second brightest planet, Jupiter, has been there since early April and will remain the brightest object (except for the moon) in the evening until October. Venus is bright because a) It is close to the sun; b) It is close to us; and c) It is covered by bright clouds. Jupiter is bright because a) It is eleven times the size of the earth and b) It is covered by reasonably bright yellow and tan colored clouds.

That leaves two naked-eye planets, one in the evening sky and one in the predawn sky. Mars is disappearing into the evening twilight and is all but gone except for the most dedicated and knowledgeable observer. Mercury is equally low in the morning twilight and presents a challenging observing opportunity for the early riser.

The stars: An early evening in June is sometimes referred to as "The Arcturus Hour." One can find this brilliant ginger-colored star by using the handle of the Big Dipper. Following the arc of the handle we come to *Arcturus* (and extending the arc farther, we encounter the bright white star *Spica* in Virgo). Arcturus is the brightest star in the constellation of Boötes the herdsman and marks one of the knees of this giant in the sky. At this time of year in the early evening Boötes appears to be lying on his back as he rises in the east. To the north of Arcturus are two stars that mark the waist of the herdsman and above these a triangle of stars marks his shoulders and head. To the south of Arcturus is a fainter star that marks one of Boötes' legs. As with many constellations Boötes is sometimes difficult to see from this description. We are probably more familiar with this pattern visualized as a kite. Arcturus is the bottom of the kite. The two stars in the waist of Boötes represent the middle of the kite and the triangle at his head and shoulders marks the top of the kite. The star in the herdsman's leg appears as a short tail on the kite.

Boötes is often referred to as the bear driver since he follows the great bear (or Big Dipper) around the sky as the earth rotates. In ancient times he had the important job of keeping the bear moving since, if she ever stopped pulling the sky around, we would have eternal night or day. There are several faint stars between Boötes and the handle of the Big Dipper that mark the constellation of Canes Venatici, the hunting dogs. They constantly nip at the heels of the great bear.

Celestial Calendar:

June 9, 9:10 a.m. EDT – Full Moon, smallest in 2017

June 15, 6 a.m. EDT – Saturn at opposition. Up all night long.

June 17, 7:33 a.m. EDT – Last Quarter Moon

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PARI is a public not-for-profit public organization established in 1998. Located in the Pisgah National Forest southwest of Asheville, NC, PARI offers STEM educational programs at all levels, from K-12 through post-graduate research. For more information about PARI and its programs, visit www.pari.edu.

For further information or questions about this *Mountain Skies* column, contact Dr. Bob Hayward at rbhayward@pari.edu. Saturn photograph from NASA/Jet Propulsion Lab.