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## A STAR FOR EACH SEASON

Ken Tapping, 8<sup>th</sup> March, 2016

Anyone who does a little casual stargazing will have noticed that we see different stars in the sky at different seasons. Moreover, when the spring stars are in the evening sky, we will see the summer stars in the early hours before dawn. Watching the stars gives us a completely different view of the passage of the seasons. These changes are due to the Earth's daily rotation and its yearly orbit around the Sun. The night side of the Earth always faces away from the Sun, and as the Earth moves around the Sun, the night side looks out into space in a changing direction.

The Earth's daily rotation carries each of us across the sunlit, or day side of the Earth, and then across the unlit, or night side. Once the Sun is no longer in the sky we see the stars. During the night, as we move across the night side of the Earth, we see the stars creep westwards. Some of them set and new ones rise. The show ends when the Sun comes up and blots them all out. The slowly changing direction in which the night side of the Earth faces the stars causes us to see the stars rise (and set) about four minutes earlier each day, making room for new constellations to slowly emerge before sunrise. In that way the constellations in the night sky change over the year. If you are looking at the constellations of a given season, in six hours the sky will contain the constellations of the next season. If you are looking at the spring constellations at 9pm, the summer constellations will be in the sky at 3am. The autumn constellations will be in the sky at 9am, but so will the Sun, so they won't be visible.

Some constellations contain a conspicuously bright star or two, which appear in the sky just before a season change, heralding the arrival of the new season. As the winter drags on, it is nice to see spring heralded in the sky. The herald of spring is the bright, golden star, Arcturus, in the constellation of Bootes, the Herdsman. We see it in the east these evenings. In mid-spring it will be high in the sky.

In late spring keep an eye on the southeastern sky. The herald of summer is Antares, a red giant star shining brightly in the constellation of Scorpius, the scorpion. During the summer it lies low in the south. In late summer Antares lies low in the southwest, and it is time to watch for the herald of autumn. This is the moderately bright star Fomalhaut, shining low in the southeast. It is quite isolated and easy to spot.

For some unknown reason, many of the autumn constellations are watery. Fomalhaut is the brightest star in the constellation of Piscis Austrinus, the southern fish, which shares the sky with Capricornus (a sea-goat), Aquarius (the water carrier), Pisces (two fishes), Cetus (whale), Delphinus (a dolphin), and Eridanus (the river). In the early hours we get one more, Hydra, (the sea monster). Piscis Austrinus is the only one of these constellations that contains a bright star.

As we move through autumn, the dim, watery constellations give way to the bright constellations of winter. There are lots of bright stars here that herald the change in season. We see the Pleiades star cluster appearing in the east, looking like a necklace dropped by a careless goddess, and nearby reddish star Aldebaran, the eye of Taurus the Bull. Then as the days pass, Betelgeux, the red star at Orion's shoulder, appears. However, winter's primary herald has to be Sirius, the brightest star in the night sky. It is bluish white, flashing like a diamond with all the colours of the rainbow. Have a look at it through binoculars. The light show is amazing. However, at the moment, look for Arcturus, in the east, shining over the piles of snow. Spring IS coming.

Jupiter rises soon after sunset, Mars at 1am and Saturn at 2am. Venus rises at 6am, lying low in the dawn glare. The Moon will be New on the 8<sup>th</sup> and will reach First Quarter on the 15<sup>th</sup>.

**Ken Tapping is an astronomer with the National Research Council's Dominion Radio Astrophysical Observatory, Penticton, BC, V2A 6J9.**  
Tel (250) 497-2300, Fax (250) 497-2355  
E-mail: [ken.tapping@nrc-cnrc.gc.ca](mailto:ken.tapping@nrc-cnrc.gc.ca)

