

March 8, 2005

Paying Attention to the Moon

For most of us, the moon is just “somewhere up there”, its comings and goings largely ignored. However, with a little practice and maybe a memory aid or two, it’s quite easy to learn the movements and phases of this, our closest celestial neighbour, and hopefully feel more aware of a key cycle of the natural world.

Surprisingly, many of the most interesting features of the moon change with the seasons. With autumn comes the Harvest Moon, when the full moon appears to linger in the evening sky night after night; in winter we find the moon riding higher in the heavens than at any other season; with spring we are regaled by lunar halos and lovely earthshine; in summer we are treated to an illusion of great lunar size as the moon travels close to the horizon all night long.

Like the sun, the moon rises in the east and sets in the west. It follows roughly the same path through the sky as the sun and can be seen as much during the day as at night. The moon is visible to our eyes because of sunlight reflected off its surface. But, unlike the sun, the moon rises each day an average of 50 minutes later than the day before. In fall, however, the difference in moonrise times can be as little as half an hour, while in spring the difference can be as much as an hour and a half. It takes the moon about 29 1/2 days to go through the full lunar cycle of eight distinct phases.

1) new moon: The new moon rises and sets with the sun and stays close to it during the day.

Because the sun is shining on the moon’s far side during this phase, it is completely invisible to our eyes.

2) waxing crescent: Rising and setting shortly after the sun, we notice this particularly striking phase in the evening twilight, when the moon is low in the west. Not only do we see a beautiful crescent on the right side of the lunar surface, but the dark, left side of the moon is also dimly illuminated thanks to a phenomenon known as earthshine. Sunlight is being reflected off of the earth, onto the moon and then back again to our eyes. Sometimes referred to as “the old moon in the new moon’s arms”, earthshine is most easily seen in the late winter and early spring because the moon is farther above the horizon than at other seasons. Watch for earthshine two to four days after the new moon. This month, the waxing crescent should be visible from March 12 to 14. In case you’re not sure if the moon is waxing or waning, think of the crescent as the rounded part of the letter D. The waxing crescent is “Developing” towards the full moon.

3) first quarter: This is the familiar half moon. It is called first quarter simply because the moon has completed one-quarter of the cycle - about 7 days - from one new moon to the next. The first quarter moon rises at about noon and sets at about midnight. This is a particularly good phase for looking at the moon’s surface through binoculars or a telescope. Focus your attention on the terminator, the line separating the moon’s sunlit side from the side hidden in shadow. The lunar surface stands out in impressive detail and bold contrast along this line.

4) waxing gibbous: The word gibbous refers to the football-like shape of the moon in this phase. The bright, waxing gibbous moon rises late in the day and shines most of the night which tends to interfere with stargazing.

5) full moon: The moon is full at about two weeks following the new moon. The full moon rises at sunset and sets at sunrise. It often appears like a huge orange ball as it climbs above the eastern horizon in the evening. A spring night lit up by a full moon and accompanied by a chorus of

spring peepers is an occasion not to be missed. Birds such as killdeer, mourning doves and various sparrows sometimes call at night when the spring moon is full. In fact, it is even possible to see migrating birds passing in front of a full moon. This does require a lot of patience, however, and a telescope of at least 20 to 30 magnification.

6) waning gibbous: The waning gibbous moon rises after sunset and is beginning to resemble the rounded part of the letter C. The moon is “Crumbling” away.

7) last quarter: Rising in the middle of the night, this “half moon” won’t interfere with your stargazing until after midnight.

8) waning crescent: What is left of the crumbling moon rises and sets just before the sun and stays in the sky most of the day. A crescent moon at dawn seems to glow with a peacefulness and tranquility unlike any other lunar phase.

If you are still have trouble telling whether the moon is waxing (becoming full) or waning (becoming a new moon), the following verses that I composed for my students may be of help. “Light on right, moon soon bright. Night on right, moon soon out of sight.” Light refers to the illuminated part of the moon; bright refers to the full moon; night refers to the dark part of the moon, and “out of sight” refers to the invisible, new moon. Seeing a crescent on the right side of the moon therefore tells you that moon is waxing.

There are other reasons for paying special attention to the moon at this time of year. Early spring is the best time of the year to see a lunar halo. A halo is a silvery ring that forms around the moon on nights when the temperature is a few degrees below freezing. The ring is formed by high-altitude ice crystals that behave like little prisms refracting moonlight. The ring often has a ghostly appearance that adds an element of mystery to spring nights.

The date of Easter, the oldest celebration of the Christian church, is actually determined by the phases of the spring moon. Easter always falls on the first Sunday after the full moon following the spring equinox (first day of spring). This year, the equinox is on March 20, followed by a full moon on Friday, March 25. This means that Easter Sunday will be on March 27.

Easter, with its nature-related themes of rebirth and renewal and its association with the phases of the moon, is an excellent example of how closely linked many religious traditions used to be with the cycles of the natural world. It is also a reminder of how disconnected modern society has become from these same cycles and rhythms.

What to watch for this week:

The scales on the buds of pussy willows and aspens are beginning to open up, revealing the furry catkins inside. These time-honoured signs of spring are actually clusters of tiny flowers densely covered with silky white hairs. Catkin is a Dutch word meaning “little kitten”, a reference to their kitten-like appearance.

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