

EDITOR: **ROB McCORMICK**
745-4641 ext. 244 / fax 743-4581
life@peterboroughexaminer.com

LIVING



Karl Egressy, special to The Examiner

*There's a full moon risin'
Lets go dancin' in the light
We know where the music's playin'
Let's go out and feel the night.
Because I'm still in love with you
I want to see you dance again
Because I'm still in love with you
On this harvest moon.*

— Neil Young



OUR CHANGING SEASONS

Drew Monkman

The late Isaac Asimov, a science and science fiction author, once said: "I saw it. A fat, yellow disk in an even slate-blue background, hanging motionless over the city. I found myself marveling at Earth's good fortune in having a moon so large and so beautiful."

Like Asimov, for those of us who enjoy paying special attention to our nearest celestial neighbour, September offers up a wonderful lunar phenomenon. For several days in a row, the moon will rise close to the same time every evening, bathing the sky in gentle moonlight. In earlier days, farmers would use this gift of light to work into the late evening, harvesting their crops by the light of the moon.

Long before we had modern calendars, people gave fanciful names to the full moons of the year to help keep track of time. The harvest moon was — and still is — the name given to the full moon closest to the fall equinox, or first day of autumn. It can therefore occur before or after the equinox.

Fall's arrival this year was on Sunday, Sept. 23, and the moon will be full tomorrow evening, Sept. 26. Therefore, Wednesday evening is officially the harvest moon. About once every four years, however, the Harvest Moon occurs in October, the latest possible date being Oct. 8.

Anyone familiar with the comings and goings of the moon knows that the full moon

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rises in the east just as the sun is setting. This is because the moon is always opposite the sun in the sky. On average over the course of the year, the moon rises about 50 minutes later on each subsequent day.

Moonrise times around the fall equinox, however, do not follow this general rule. In fact, the full moon rises an average of only 25 minutes later for several evenings in a row at this time of year and will appear full or nearly full on all of these nights. For example, tonight the moon will rise at 6:34 p.m. Tomorrow, it comes up at 6:55, Thursday at 7:19, and on Friday at 7:46. Therefore, there is no long period of darkness between sunset and moonrise at this time of year. In Edmonton, because it is much further north than Peterborough, the moon rises an average of only 11 minutes later each evening.

The September rising times are caused by the small angle the ecliptic — the apparent path that the sun traces through the sky — makes with the eastern horizon right now. In the fall, the moon's path is veering toward the north, from constellations like Scorpius towards Taurus and Gemini. As a result, the moon's night-to-night motion has a more northerly component than it does during the summer and winter months. This comes at the expense of the easterly component of its motion and results in the interval between successive moonrises becoming shorter than usual.

It is interesting to note that at the spring equinox, the moon behaves in exactly the opposite way. There is an extra long time between moonrises from one evening to the next. In fact, the difference is more than twice as long — over 60 minutes — than right now.

Getting back to the harvest moon, another

difference in the moon's behaviour in early fall is that it follows a very shallow angle up into the sky. It therefore seems to linger just above the horizon much longer than usual. Furthermore, because people are out and about on early fall evenings, they tend to notice the moon more, especially since it is so low in the sky. Its seemingly larger size and orangish colour immediately catch our attention.

A full moon always appears to be larger when it is rising over the horizon than when it is riding high in the sky. This isn't because the moon is any closer to Earth than usual. It is simply an illusion. When measured or photographed, the moon is exactly the same size no matter where it is in the sky.

Our eyes have much more experience judging the size of objects located straight ahead. We also tend to relate the size of the rising moon to the hills, trees and buildings that appear to be close by it. On the other hand, we tend to see things situated high above us as being smaller. This is also true for how we see the constellations. Cassiopeia, for example, looks much larger close to the horizon than high up in the sky.

As for the rich orange colour, this is due to a physical effect. When we see the moon low in the sky, we are looking at it through a greater amount of atmosphere than when the moon is overhead. When the moon is near the horizon, its light must pass through a lot more atmosphere than when it is high in the sky. We are actually looking through about three times as much atmosphere when the moon is rising or setting. Air molecules and dust in the atmosphere scatter away the blue, green and purple components of white moonlight (actually reflected sunlight) and thereby allow the orange, yellow and even

red components to dominate. All moons and even planets like Jupiter and Venus appear orangish when low in the sky.

There is an element of good fortune that the harvest moon's annual bounty of evening moonlight occurs around traditional harvest time. To busy farmers, it was much appreciated. Before strong lights on machinery allowed farmers to work at night, the harvest moon was said to provide the equivalent of two additional days of harvesting. This gift of light is not just limited to the evening, either. The harvest moon casts its bright light all night long.

The moon at this time of year is of special interest to some birders, too. By focusing a spotting scope on the moon's disc — and arming oneself with lots of patience — it is possible to see the silhouettes of migrating birds passing in front of the moon. Although it is impossible to identify the actual species this way, the experience still provides a wonderful sense of the mystery of migration as thousands of tiny voyagers stream southward by cover of darkness and only a few hundred metres above our heads.

The full moon following the harvest moon is also quite impressive. Called the hunter's moon, it usually occurs in October. The moon's rising times and path across the sky are similar to those of the harvest moon. This year it will occur on Oct. 26. Like the farmers, hunters of long ago took advantage of this moonlight to hunt game late into the evening.

Drew Monkman is a Peterborough teacher and author of *Nature's Year in the Kawarthas*. He can be reached at dmonkman1@cogeco.ca. Karl Egressy is a Guelph nature photographer. To see more of his work and to contact him, go to www.kegressy.com.