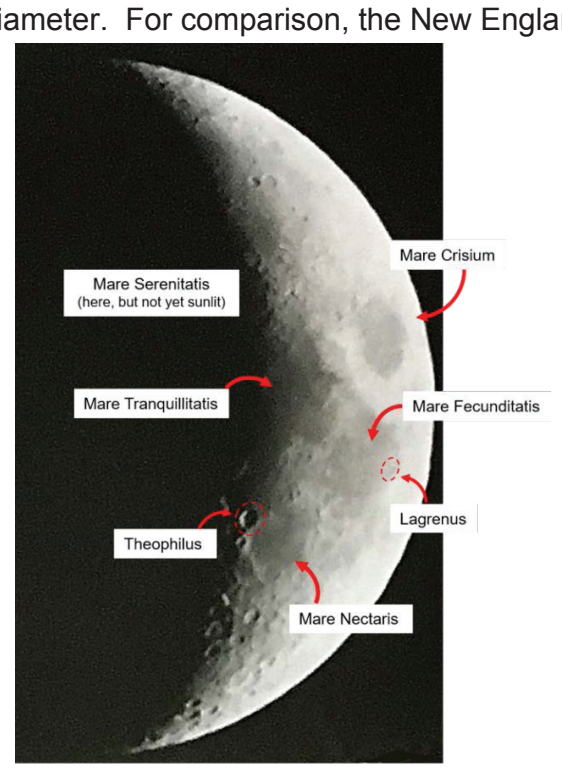
WHAT'S UP?

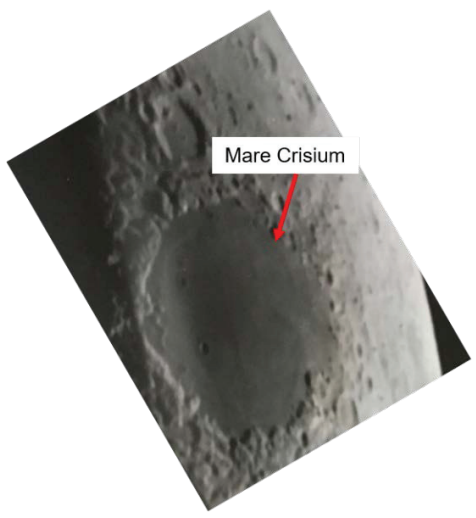
Hello, again. Summer is here, the evenings are warm. Once it finally gets dark, this is a great time to go outside (with bug spray on) and look up at our beautiful night skies. What to look at? Well, on this Sunday (the 21st) morning at 2:42 a.m. the Moon reaches the New Moon phase and so the monthly cycle begins afresh. So, over the next few weeks, I'll be featuring the Moon – why we see it change its appearance, why we see it where and when we see it, and what are some interesting features to try and identify. What are the types of features that I'm going to be discussing? On type has to do with the brightness of the feature. The Moon's surface has, in general, bright areas and darker areas. When astronomers began turning telescopes towards the Moon, not knowing just what the dark areas were, likened them to areas on Earth where there are bodies of water. So, they used the Latin words for different bodies of water to name them. The Latin words for ocean, sea, bay, lake, and marsh are *oceanus, mare, sinus, lakus, and palus* respectively. So, for example, on the Moon we have areas called *Oceanus Procellarum*, *Mare Imbrium*, *Lakus Somniorum*, *Sinus Amoris*, *and Palus Putredinis*. In English, we call them the Ocean of Storms, the Sea of Showers, the Lake of Dreams, the Bay of Love, and the Marsh of Decay. The brighter areas when viewed through telescopes were seen to be mountainous and filled with craters. Many of the mountain ranges were named after those on Earth. For example, there are *Montes Apenninus* (the Apennine Mountains) and *Montes Alpes* (the Alps). The craters were generally named after scientists and mathematicians. I'll talk about these and others as they come into our view during the month.

As the Moon begins to move through its familiar cycle, we'll start out seeing the Moon only in the evenings. Between Sunday evening and next Friday evening, we'll see the Moon grow from a barely-visible sliver to a not-quite complete semi-circle. In fact, Sunday's sliver may not even be visible to un-aided eyesight. Can you see it? As the sunlit portion of the Moon that we see continues to increase, there are some interesting features to look for. On Monday and Tuesday, when you look at the thin crescent, can you see the outline of the entire face of the Moon? Well, if the bright part of the Moon that we see is lit by the Sun, what's lighting this other part – the part that is dimmer and shows us the full outline of the Moon? It is still the Sun, but it is sunlight that has reflected from the Earth first. The crescent that we see is lit directly by the Sun's rays. The rest of the Moon is lit from light rays that travel from the Sun to the Earth, and then reflect from the Earth to the Moon.

The Moon is so slim on Monday, that it's hard to see any surface features – even with a telescope. By Tuesday evening, you may start to notice shading on the crescent Moon. The first feature that you might notice is a round dark spot on the upper half of the crescent. That round spot is called *Mare Crisium* or, the *Sea of Crises*. It is a relatively smooth, flat area on the Moon that is about 360 miles in diameter. For comparison, the New England states (minus Maine) would fit neatly inside Mare Crisium. By Wednesday, another dark area, below Mare Crisium will start to be visible. It is the eastern part of *Mare Fecunditatis* – the Sea of Fecundity. If you are using binoculars or a telescope, look at the large crater on the eastern edge of Mare Fecunditatis. It is the crater, *Lagrenus*. It is named after Michel Florent von Langren, a 17th century Belgian engineer and mathematician. von Langren was the author (in 1647) of the first lunar map that include the names of lunar features. As Thursday and Friday evenings arrive and we see more of the Moon's surface, we'll be able to see not only all of Mare Fecunditatis, but also Mare Tranquillitatis (the Sea of Tranquility) and Mare Serenitatis (the Sea of Serenity). The Sea of Tranquility is where humans first landed on the Moon in July, 1969. Though he was first, von Langren's naming system never took hold, and a map produced in 1651 by Giovanni Riccioli and Francesco Grimaldi included the names of features (by Riccioli) that are pretty much the same as the names we use today.



A photograph of a 5-day old Moon



This phase of the lunar cycle is my favorite. If you are using binoculars or a telescope, look along the edge between the light part and the dark part. This edge is called the *terminator*. It divides lunar daytime from lunar nighttime. The parts of the Moon on the terminator are experiencing dawn. Just as on Earth, when the Sun is low in the sky our shadows extend a long way along the ground, the shadows of the high portions of the Moon – crater rims and mountains, cast long shadows. Additionally, just as high mountain tops on Earth are lit by the morning sunlight before the low-lying land, you can see tiny points of light in the darkness just to the left of the terminator. These are mountains on the Moon just catching the first light of the new lunar day. In the photograph of a 5-day-old Moon (close to the way it will look on the evening of the 26th) note the bright crater rim on the terminator on the left side of Mare Nectaris (the Sea of Nectar). Its western rim is just catching the Sun's rays, but the floor of the crater is not yet lit. Next time, I'll talk about things to see on the Moon as it moves from the First Quarter phase towards Full.

You can reach me at **astroblog@comcast.net** with any questions and comments you have. This is *What's Up?* Installment #22.

Until next time,
Keep looking up!

Barry